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NUTRITION AND GROWTH*

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THE NATURE OF GROWTH

Growth receives its impetus, in a general way, from two distinct sources of influence. There is an *internal* factor, representing in good part the hereditary features, among which the inherent growth impulse or capacity to grow is conspicuous. The other influence —the *external* factor—involves the environment of growth and includes, among other agencies, the food supply. No single factor is entirely independent of the other. Of the growth impulse Rubner has subtly said: *Ernährungsphysiologisch drückt er sich in dem Verhältniss der Ansatzgrösse zum Stoffwechsel aus.* Nutrition can only give the growth impulse free play; neither can succeed without the other. The nutrition factor is controllable; the growth impulse is inborn and, in part at least, not subject to regulation at will.

If growth were merely the resultant of the assimilation of food, the problems attending it would be somewhat simplified. The pathology of growth may, however, be manifested in the midst of perfect nutrition and teaches plainly that something more than the food supply is here concerned. Abnormal growth and perverted nutrition are by no means always coincident. I have discussed elsewhere some of the other aspects of growth;[1] the present review will be confined to the food factor.

THE ENERGY FACTOR

No modern discussion of nutrition during growth can overlook the energy aspects of the subject. The energy metabolism of youthful, that is, growing individuals is said to be somewhat greater than that of adults, whether it be calculated on the basis of units of body weight or of skin area. To justify such statements it is, of course, necessary to have some dependable standard of comparison. Growing individuals are of very variable size. For many years it has been customary, following Rubner's lead, to emphasize the significance of the relationship supposed to exist between the metabolism and the body surface rather than between the metabolism and the body weight.[2] Not long ago Murlin and Hoobler[3] announced that metabolism in different children is much more nearly proportional to the weight than to the surface area, and when the weight is first multiplied by the specific gravity the agreement is even better. More recently Benedict and Talbot[4] have concluded, from an elaborate study of infants, that the basal metabolism cannot in any wise be considered a direct function of the body weight and the body surface, and particularly has no relationship with body surface on the basis of the law of cooling bodies. They are inclined to believe that the "active mass of protoplasmic tissue"—a quantity which cannot yet be measured directly—determines the fundamental metabolism. A precise formulation of the energy requirement of the growing organism, expressed in general terms, must abide further investigation.[5]

Aside from its energy aspects, the food requirement during growth is peculiar in that the intake of certain groups of nutrients, such as the proteins and inorganic salts, must exceed the demand for wear and tear, so that some excess will be available for the formation or completion of new cells and the elaboration of the tissues that especially develop in the period of growth. For the most part the materials included in the above requirement are merely those which are demanded in the usual maintenance of the grown adult, though perhaps in smaller proportions. It is not improbable, however, that the food needs of the growing organism may in part be specific and peculiar, calling not only for a little more lime or iron or protein than the non-growing individual requires, but for special substances in addition.

HISTORICAL ASPECTS OF NUTRITION IN GROWTH

To gain some conception of the changes which progress in the science of physiology has wrought in the theory of nutrition during growth, we may turn back to the classic monograph published in 1881 by Carl Voit. This marks the beginning of what may be called the modern generalizations on this subject. Voit gave expression to the then current belief that the period of early growth is one characterized by a comparatively large food requirement and intensity of metabolism. "It is generally believed," he writes,[6] "that the youthful organism is the seat of a particularly active metabolism." This was stated at a time when the energy features were not emphasized as they were later, and at a period when the consideration of the metabolism in growth centered primarily in the transformation of the nitrogenous compounds. The predominant interest in the metabolism of protein had a certain justification,

* Delivered before the Harvey Society of New York, Nov. 28, 1914, and before the Rush Society of Philadelphia, Jan. 23, 1915.

1. Mendel, L. B.: Viewpoints in the Study of Growth, Biochem. Bull., 1914, iii, 156; Growth, Ergebn. d. Physiol., to be published.

2. McCrudden, F. H., and Lusk, G.: Animal Calorimetry. VII. The Metabolism of a Dwarf, Jour. Biol. Chem., 1913, xviii, 450.

3. Murlin, J. R., and Hoobler, B. R.: The Energy Metabolism of Normal and Marasmic Children with Special Reference to the Specific Gravity of the Child's Body, Proc. Soc. Exper. Biol. and Med., April 15, 1914, p. 115.

4. Benedict, F. G., and Talbot, F. B.: The Gaseous Metabolism of Infants, Carnegie Institution of Washington, 1914, Pub. 201.

5. Compare Murlin and Hoobler: Am. Jour. Dis. Child., 1915, ix, 81, and Benedict: Proc. Nat. Acad. Sc., 1915, i, 105.

6. Voit, C.: Chapter on "Nahrung noch wachsender Organismen" in Die Ernährung, Hermann's Handb. d. Physiol., 1881, vi, 332.

in that growth (which means increase of protoplasm) in some degree involves a deposition of nitrogenous derivatives in the organism.

Voit realized that although a deposition of flesh (*Ansatz*) can occur in the fully developed adult, the comparable phenomenon of tissue increment in the growing individual is much more conspicuous. To account for this unlike physiologic behavior in the two stages of the organism—the adolescent and the adult—he came to the conclusion that there are differences in the destructive metabolism of these two periods of life. Quoting Voit:[7]

"It is demonstrated, therefore, that in an organism still in process of growth the conditions for the disintegration of protein are incomparably less favorable than they are in adults. With this fact is associated the rapid growth of the organs."

How is the alleged lessened protein catabolism in growth to be accounted for? Voit replies:

We must have recourse to the assumption that the growing organs rapidly withdraw circulating protein and by organization into tissue protein protect it from degradation. The youthful organs behave like a secreting mammary gland or a rapidly developing neoplasm, whereby likewise protein is fixed and spared from destruction. . . . In consequence of the increasing size of the growing organs little by little more protein is used up; but the extent of growth of the cells also gradually declines, so that less and less protein is withdrawn from the circulating media and more and more is destroyed. Accordingly larger amounts of protein are subsequently required to accomplish tissue production.[8]

These contentions of Voit have been reviewed critically by Rubner[9] in the light of several decades of subsequent investigation. After pointing to the now recognized importance of making comparisons of the total metabolism on the basis of suitable units—according to Rubner, in terms of the surface area of the body—he rejects the idea of a greatly heightened total metabolism in the period of adolescence.[10] Rubner likewise denies that tissue deposition (*Ansatz*) is essentially unique in the growing organism.[11]

In distinction from his predecessors, Rubner insists that there is neither decreased essential protein catabolism nor proportionately much greater protein consumption requisite in growing individuals. Thus he writes: "I therefore believe the conclusion that growing animals as a rule consume a large amount of protein and destroy extremely little—a conclusion based on experiments dating from the developmental period of the science of nutrition—is untenable" (p. 94).

These quotations may suffice to contrast the views of two masters of the physiology of nutrition in successive generations. Rubner has further made it evident by his researches, particularly with O. Heubner,[12] that the diet of the growing infant is in general comparatively low in protein, rather than the reverse which is commonly assumed. How low the protein intake may remain is exemplified by the following data:[13] for growth, 7 per cent. of the total energy intake; for maintenance, 5 per cent. of the total energy intake.

With an abundance of calories the child can deposit nitrogen and grow as soon as the intake contains the slightest excess of protein above the small need set by the wear and tear of the organism.

It seems sometimes to be forgotten, particularly in connection with animal nutrition, that large addenda of protein in the diet do not guarantee growth. As Rubner has remarked:

Growth is not proportional to the quantity of protein in the diet. Growth is a *function of the cell;* it can be rendered *latent* by an insufficient supply of protein, but protein cannot raise the rapidity of growth above the limits set by nature. As the amount of protein in the diet increases a smaller percentage is utilized (for growth) and the excess of the intake is merely consumed in place of an equivalent of non-nitrogenous food fuel. The strong attraction between protein and growth decreases in the course of the period of development and is greatest in early life (p. 110).

From Rubner's point of view, and with particular reference to the human suckling that is not overfed, the destruction of protein is confined in the first period of growth to the wear and tear quota. "This behavior of protein during growth," Rubner writes, "is a biological necessity; the relative importance of the physiological functions involved determines the order in which they are filled. First, losses are replaced; next, growth ensues; thirdly, the usual metabolism of protein for the production of heat occurs" (p. 111).

NEWER FEATURES OF THE PHYSIOLOGY OF GROWTH

In all of the foregoing one will search in vain for any indication of those newer conceptions of metabolism, in the development of which the name of Abderhalden has been so prominent. "We must assume," says Rubner, "that the food material must be in excess of a threshold value before growth can proceed. Whether it is the degree of concentration of protein in the tissue fluids that is the determining factor, or whether the body hoards materials and keeps them in reserve for its purposes, cannot be determined at the present day" (p. 113). Rubner did venture the statement, in 1908, that "in growth *all* protein compounds which are essential for cell construction are taken up" (p. 111); and he adds that it is not certain whether the same procedure is essential to tissue repair. Meanwhile has come a newer conception which no longer pictures the food products entering

7. Voit, C.: (Note 6) p. 536.
8. Voit, C.: (Note 6) pp. 537-538.
9. Rubner, M.: Das Problem der Lebensdauer und seine Beziehungen zu Wachstum und Ernährung, 1908, p. 87, and following; also Ernährungsvorgänge beim Wachstum des Kindes, Arch. f. Hyg., 1908, lxvi, 87.
10. "Mit dem Begriff Wachstum hatte man unwillkürlich, indem man sich der wichtigen morphologischen Veränderungen der Zelle und die Aktion des Zellkerns vor Augen hielt, immer den Gedanken an einen enorm gesteigerten Stoffwechsel verbunden und der jugendlichen Zelle wies man auch sonst in dieser Richtung eine besondere Stellung zu. Durch meine Untersuchungen ist hier Klarheit geschafft worden. Die jugendliche Zelle hat einen Kraftwechsel, der sich schon aus der 'Kleinheit' jugendlicher Organismen ableiten lässt und selbst wachsend, das sieht man aus den berichteten Beobachtungen, beansprucht sie ein sehr bescheidenes Mass von Nahrung, das über die direkt zum Ansatz verwendeten Stoffe nur unwesentlich hinausgeht." (Rubner, M.: p. 90. See Note 9.)
11. "Ich habe gesehen dass aber unter ähnlichen Nährstoffverhältnissen wie es bein jungen Tier die Regel ist, auch beim ausgewachsenen länger dauernder Ansatz erzielt wird, aber eines versteht sich von selbst, die Variante des Erfolges der Aufspeicherung von Eiweiss ist verschieden. Dass der Ansatz beim Ausgewachsenen eher zum Stillstand kommt als das Wachstum ist etwas ganz Selbstverständliches. Beim Wachstum wird eben von der Zelle immer wieder Platz für die Eiweissablagerung geschaffen, weil neue Zellen gebildet werden und bei der Rekonstruktion füllen sich nur solche Zellen, in denen ein Mangel vorhanden ist. Das wachsende Tier vermehrt allmählich sein Gewicht auf das 20 bis 30 fache des Neugeborenen, die sich rekonstruierende Zelle kommt selten über die Verdoppelung der Masse hinaus. Damit wird aber kein neuer Gesichtspunkt gewonnen, denn dass nur junge Tiere wachsen und alte nicht, bedarf keiner weiteren Erläuterung. Ueber den Kernpunkt der Frage, ob nämlich die Anziehung für das Eiweiss der Nahrung in der Jugend eine andere ist als später, ist aus dem Umstand der grossen Länge der Dauer des Wachstums gegenüber dem kürzer währenden Ansatz gar nichts zu schliessen. Das Wachstum könnte durch dieselben, auch sonst beim Ansatz wirkenden Kräfte vermittelt werden, und der grosse Zuwachs nur das Produkt der länger dauernden Ansatzmöglichkeit sein. Für entscheidende Experimente auf diesen Gebiete müssten ganz besondere Voraussetzungen gemacht werden, man kann grossen Ansatz nur sehen, wenn die Zellen durch Hunger stark heruntergekommen sind und dann wieder genährt werden. Hiermit müsste man unter genauer Einhaltung der physiologischen Versuchbedingungen dann normale Fütterungsversuche am wachsenden Tiere anstellen." (Rubner, M.: pp. 91-92. See Note 9.)
12. Rubner, M., and Heubner, O.: Zur Kenntnis der natürlichen Ernährung des Säuglings, Ztschr. f. exper. Path. u. Therap., 1905, i, 1.
13. Rubner and Heubner: See Note 12.

unchanged, or at most only slightly altered, into the cycle of metabolism. The significance of the nutrient units—the *Bausteine*—has come into the foreground. The tissues are independent of the gross peculiarities of the ingested foods; they select their constructive units for growth and repair, and their fuel, out of the shattered remains of the alimentary contents. *Der einzelne Baustein verrät nicht welche Rolle seine Muttersubstanz dereinst im Zellgetriebe gespielt hat. So wird die einzelne Körperzelle in weiten Grenzen unabhängig von äusseren Einflüssen.*[13]

A careful comparison of the various proteins which may serve as food proteins and of which the biologic properties and chemical make-up are to-day known in some detail, at once excludes the probability of a direct relation between them and the body proteins which they must be supposed to replace or augment. The differences are too conspicuous.

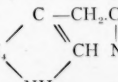
QUANTITATIVE COMPARISON OF AMINO-ACIDS OBTAINED BY HYDROLYSIS FROM PROTEINS

(Compiled by T. B. Osborne, 1914) *

	Casein	Oval-bumin	Gliadin	Zein	Edestin	Legumin (Pea)
Glycocoll	0.00	0.00	0.00	0.00	3.80	0.38
Alanin	1.50	2.22	2.00	13.39	3.60	2.08
Valin	7.20	2.50	3.34	1.88	6.20	?
Leucin	9.35	10.71	6.62	19.55	14.50	8.00
Prolin	6.70	3.56	13.22	9.04	4.10	3.22
Oxyprolin	0.23	?	?	?	?	?
Phenylalanin	3.70	5.07	2.35	6.55	3.09	3.75
Glutaminic acid	15.55	9.10	43.66	26.17	18.74	13.80
Aspartic acid	1.39	2.20	0.58	1.71	4.50	5.30
Serin	0.50	?	0.13	1.02	0.33	0.53
Tyrosin	4.50	1.77	1.61	3.55	2.13	1.55
Cystin	?	?	0.45	?	1.00	?
Histidin	2.50	1.71	1.49	0.82	2.19	2.42
Arginin	3.81	4.91	2.91	1.55	14.17	10.12
Lysin	5.95	3.76	0.15	0.00	1.65	4.29
Tryptophan, about	1.50	present	1.00	0.00	present	present
Ammonia	1.61	1.34	5.22	3.64	2.28	1.99
	65.49	48.85	84.73	88.87	82.28	57.43

* These analyses are combinations of what appear to be the best determinations of various chemists.

No one would gainsay that if calcium or iron is indispensable for growth it must be furnished in the dietary. But it has required not a little investigation, and much more still is needed, to make an equally convincing statement with reference to the individual protein structural units, the amino-acids. The reasons for this uncertainty are not hard to find. The inequalities of the proteins from the amino-acid point of view had not been demonstrated clearly until very recent times; and, what is more important, it has not been possible to say what capacity the animal organism may have to synthesize anew the different amino-acids—eighteen or more in number—which find a place in the construction and functions of the body.

It is plain, then, that we must know what nutrient units of any nature are indispensable and, further, whether a complete lack or deficit of them in the intake can be made good by direct synthesis. Thus it has already been demonstrated that glycocoll CH_2COOH | NH_2 can be manufactured anew in the body. Lack of it in the diet would therefore not necessarily betray itself in any nutritive upset. The amino-acid tryptophan  , on the other hand, apparently cannot be produced (at least not in sufficient abundance) *de novo* by mammals, if one may judge by the disastrous results which follow a tryptophan-free dietary and the prompt recovery which the restitution of the amino-acid entails. The situation is further complicated by the probability that new tissue construction, such as growth involves, demands structural units which are either conserved in the wear and tear of ordinary maintenance without growth, or are not required for, or destroyed in, the maintenance metabolism.

13. Abderhalden, E.: Synthese der Zellbausteine in Pflanze und Tier. Berlin, 1912, p. 101.

THE PROTEIN FACTOR

Restricting our considerations for the moment to the protein requirement, we shall not err in identifying it to-day with the specific amino-acid needs of the growing organism. A direct way to study this consists in administering the nitrogenous components of the diet (in so far as they are ordinarily furnished by proteins), in the form of mixtures of the known amino-acid derivatives. The technical difficulties of such a procedure are almost insuperable at present. Abderhalden[14] alone has attempted, with any degree of success, to feed young dogs with predigested foods. In some of his experiments considerable gains in weight—in one case 1,000 gm., in another 1,200 gm.—were made. Prolonged growth is an admirable index of protein synthesis and of the adequacy of a dietary. But a temporary or transient gain of weight, or one which follows the depletion of the body by previous unsuitable nutritive conditions, can not be taken as evidence of true growth; for repair may be accomplished without necessarily implying actual synthetic processes in the sense intended. Real growth, consistently continued, manifests itself in characteristic increments of weight and size as exhibited in typical curves of growth.

Another way of approaching the problem of what nitrogenous units are essential for growth consists in comparing the nutritive efficiency of individual proteins and particularly such as are known to differ widely from the typical tissue protein of animals in their structural composition. Obviously this cannot be done by additions to the usual mixed diet which commonly contains a diversity of proteins. Even milk, which is looked on as a comparatively simple food, furnishes at least two proteins—casein and lactalbumin—decidedly unlike in structure and amino-acid yield, and present in widely different proportions in the mammary secretion of different species. It is necessary, therefore, to devise a ration in which all of the essential food ingredients except proteins or amino-acids are present in abundance, and to which these nitrogenous food substances can be added one by one and tested. In this way the protein factor becomes the sole variable in the diet.

Despite numerous earlier failures, the possibility of maintaining animals on mixtures of isolated food substances and of inducing growth thereon has at length been demonstrated.[15] Röhmann[16] has been a pioneer in this field.

14. Abderhalden, E.: Fütterungsversuche mit vollständig abgebauten Nahrungsstoffen, Ztschr. f. physiol. Chem., 1912, lxxvii, 22. Abderhalden, E., and Hirsch, P.: Fütterungsversuche mit Gelatine, Ammonsalzen, vollständig abgebauten Fleisch und einem aus allen bekannten Aminosäuren bestehenden Gemisch ausgeführt an jungen Hunden, Ztschr. f. physiol. Chem., 1912, lxxxi, 323.

15. The earlier literature is reviewed in Osborne and Mendel's article. See Note 17.

16. Röhmann, F.: Ueber künstliche Ernährung, Klin.-therap. Wchnschr., 1902, (a), No. 40, p. 1.

T. B. Osborne and I[17] were able to facilitate the study of the rôle of the individual proteins and amino-acids in growth by introducing in the artificial ration the use of what we have termed "protein-free milk."

This consists of the dried residue of milk after removal of fats and proteins. It contains, aside from traces of unremoved proteins, all of the milk sugar and inorganic elements along with small amounts of incidental components, most of which remain unknown, yet evidently furnish an essential non-protein factor to the diet. On mixtures of "protein-free milk," sugar, starch, and purified fats along with selected isolated proteins, young white rats (and in some cases mice[18]) have grown to maturity and have in turn produced young even in the third generation. The catalogue of the individual proteins with which, in suitable concentration, normal growth has been secured, at least for considerable periods of observation if not until completed maturity, includes:

Proteins of Animal Origin
Casein (milk)
Lactalbumin (milk)
Ovalbumin (hen's egg)
Ovovitellin (hen's egg)

Proteins of Vegetable Origin
Edestin (hemp-seed)
Globulin (squash-seed)
Excelsin (Brazil-nut)
Glutelin (maize)
Globulin (cotton-seed)
Glutenin (wheat)
Glycinin (soy-bean)
Cannabin (hemp-seed)

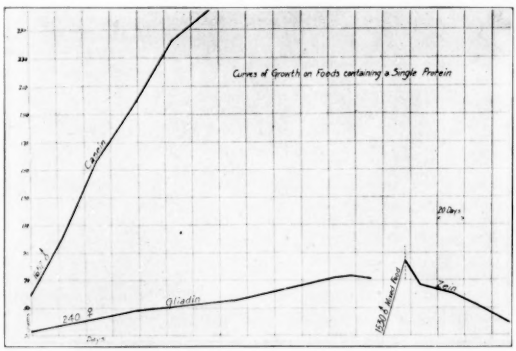


Chart 1.—Showing typical curves of growth of rats maintained on diets containing a single protein. On the casein food (devoid of glycocoll) satisfactory growth is obtained; on the gliadin food (deficient in lysin) little more than maintenance of body weight is possible; on the zein food (devoid of glycocoll, lysin and tryptophan) even maintenance of body weight is impossible.

Failure to induce growth has attended our trials with legumelin (soy bean), vignin (vetch), gliadin (wheat or rye), legumin (pea), legumin-(vetch), hordein (barley), conglutin (blue or yellow lupin), gelatin (horn), zein (maize), phaseolin (white kidney bean).

In the case of some of these proteins, notably gelatin, zein, gliadin and hordein, an explanation for the failure of growth was at once suggested by the known deficiencies of each of these substances in respect to one or more amino-acids already ascertained to be yielded by the adequate proteins. The tryptophan group (with its indol nucleus) is missing in gelatin and zein; the diamino-acid group of lysin is lacking, or nearly so, in zein, gliadin, and hordein. Other shortcomings are the lack of the tyrosin group in gelatin and the glycocoll group in zein. That glycocoll is either not indispensable or else that it can be furnished by direct synthesis in the organism is shown by the excellent growth attending the use of the glycocoll-free casein (Chart 1).

17. Osborne, T. B., and Mendel, L. B.: Feeding Experiments with Isolated Food-Substances, Carnegie Institution of Washington, 1911, Pub. 156, Part II, p. 80. (Description of "protein-free milk.")
18. Wheeler, Ruth: Feeding Experiments with Mice, Jour. Exper. Zool., 1913, xv, 209.

If we analyze the situation as revealed in the charts of some actual experiments it becomes apparent that both lysin and tryptophan are unquestionably necessary as constructive units in growth. The decline brought about by the zein food can be stopped by the addition of tryptophan, as such, to the diet. This results in maintenance; but no growth ensues until lysin also is added (Chart 2).

The significance of other amino-acids derived from proteins needs to be studied in comparable ways. Experimentally such studies are complicated by the fact that most available proteins are not entirely devoid of the important amino-acid nuclei. The supply of the missing amino-acids need not be in the form of the isolated compound. Suitable proteins which yield them answer in the same way (see Chart 3).

In these illustrations the supply of the various proteins was a liberal one. When, however, the protein is offered in more restricted amounts, the indispensability of certain amino-acids may make itself apparent in most surprising ways. Casein, for example, is comparatively deficient in its yield of the sulphur-containing amino-acid cystin. When the amount of casein in the diet is plentiful, all the amino-acids are evidently afforded in adequate amount to permit the maximum synthesis of (cystin-yielding) tissue allowed by the capacity to grow—the hereditary factor. When the supply of casein is limited, however, the curve of growth is altered. This does not mean that the growth is limited by the lack of sufficient protein per se; for the addition of cystin at once raises the nutritive efficiency of the diet. Growth has here been limited by the supply of the (relatively) least abundant essential amino-acid—in this case cystin (Chart 4).

The same story is told in the case of edestin, a protein adequate for growth when fed in abundance, but revealing its comparative poverty in lysin groups as soon as the intake is restricted. Here the addition of lysin, instead of cystin, makes it possible for the organism to use the remaining more abundant amino-acids effectually for growth even when the total protein supply is not large (Chart 5).

The possibility of growth and the extent to which it is accomplished are limited by the supply of each essential amino-acid. It matters not whether this is exhibited as such or in the guise of protein; in either event the "law of the minimum" is exemplified. The amino-acid shortcomings of one protein can be made good by supplementing it with another protein in which they do not exist to the same degree.

Let us consider what these new observations mean for the problem of protein minimum. It may now be preferable to speak of amino-acid minima. The differences between proteins appear in a new light. The presence of lactalbumin along with casein in milk furnishes a mixture of proteins which is preferable, gram for gram, to casein alone. The relative amino-acid shortcomings of the casein, as exhibited in the low content of cystin, are averted by the lactalbumin. From the point of view of economy, therefore, it is advantageous to learn the amino-acid make-up of all available food proteins, so that they can be exhibited in proportions furnishing a balanced total amino-acid make-up as nearly ideal as possible. This means far more, in a practical way, to animal production in agriculture than to human nutrition in which we are more lavish with our resources. The proteins of the comparatively cheap maize kernel, for example, consist largely of zein, which of itself fails to maintain nutritive equilibrium.[19] Corn and the by-products of the maize kernel are notably insufficient for good feeding results unless they are supplemented by other protein-containing foods. Osborne and I have found different proteins like casein, lactalbumin, and edestin, or even the maize glutelin—the companion protein of zein in the maize kernel—not equally efficient as a supplement to zein in promoting growth. As we have written elsewhere:

The foregoing experiences bring into new light certain problems related to the economy of foods and commercial fodders. Corn forms the cheapest basis for the feeding of farm animals in food production. Inasmuch as the rate of growth is limited by hereditary, rather than nutritive, conditions, it is futile to furnish more energy and particularly more protein, than is essential for normal development. An inadequate but cheap protein can be supplemented advantageously by one which supplies the needed factors, that is, amino-acids. The relative economy of these additions of supplementary proteins to an inefficient but inexpensive ration depends not only on their quantity but likewise on their amino-acid make-up. A very small addition of a protein like lactalbumin may be far more advantageous, when the cost per unit of gain is considered, than larger amounts of cheaper proteins which supplement less perfectly the amino-acid deficiency of the standard diet. It is perhaps not too utopian to expect that the day may come when amino-acid concentrates may serve to render perfect the mixtures of proteins in a fodder like maize or its commercial by-products.[20]

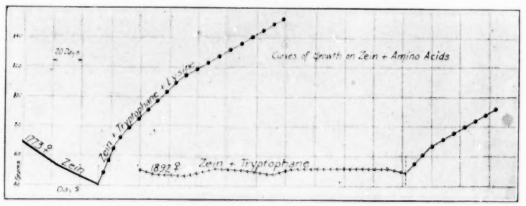


Chart 2.—Showing the effect of the addition of the amino-acids tryptophan and lysin to zein which fails to yield them. With zein alone (Rat 1773) there is nutritive decline. The addition of tryptophan (Rat 1892) permits maintenance without growth on foods containing zein as the sole protein. The addition of tryptophan and lysin to zein enables the animals to make considerable growth. It is interesting to note, in relation to Rat 1892, that the growth of this animal was inhibited for six months without material change in its body weight. That the capacity to grow is not lost by prolonged dwarfing on imperfect food is shown by the subsequent growth of the animal when lysin was added to the food containing zein and tryptophan.

The maize kernel is not only quite low in protein, the major part of which fails to yield certain important amino-acids, but it is markedly deficient in calcium which is obviously demanded in abundance in the ration of growth. Evvard, Dox, and Guernsey[21] have lately found that the addition of calcium carbonate and blood protein to a basal ration of corn and salt fed to pregnant gilts resulted in more advantageous growth, that is, in new-born pigs having greater size, more vigor, bigger bone, increased coat quantity, better coat and color and higher condition. It requires little scientific imagination to translate such experiments with maize into points of view applicable to human feeding.

CARBOHYDRATES AND GROWTH

Without carbohydrate in the diet the nutritive functions of a growing individual are menaced quite as readily as they are during adult life. Metabolism exhibits pathologic manifestations in the lack of carbohydrates. The isolated occurrence of lactose, a carbohydrate peculiar to milk, in the food which nature has provided for growing mammals has quite naturally given rise by teleologic reasoning to the belief that milk sugar has some special virtue in the nutrition of growth. On the other hand, sucrose, maltose, glucose, and even starch and dextrins have found champions, particularly among pediatrists who, above all others, have become interested in ascertaining which, if any, is the best carbohydrate to furnish to growing infants. There are indications, founded on rational experimentation, of inequalities in the value of the different substances referred to. Perhaps these are to be associated with the relative preparedness of the alimentary tract at different ages (or in different species) to digest the various carbohydrates prior to their absorption. Suggestions of inequalities in this respect are not entirely wanting.[22] But the strict contrast of the comparative value of the familiar sugars can only be made under experimental conditions in which the number of other variables is reduced to a minimum. Despite the large amount of literature on this subject, a critical examination of it leaves the impression that the evidence at hand will not justify a dogmatic conclusion which discriminates unqualifiedly for or against one of the familiar dietary sugars.[23]

FATS, "LIPOIDS" AND GROWTH

There is, at present, a dearth of conclusive information whether true fats are an actual requirement for the maintenance of a healthy, normal organism. Fats

19. Osborne, T. B., and Mendel, L. B.: Feeding Experiments Relating to the Nutritive Value of the Proteins of Maize, Jour. Biol. Chem., 1913, xiv, 31; Am. Jour. Physiol, 1913, (a), xxxi, 16; Nutritive Properties of Proteins of the Maize Kernel, Jour. Biol. Chem., 1914, (b), xviii, 1. Osborne, T. B.: The Nutritive Value of the Proteins of Maize, Science, 1913, xxxvii, 185.

20. Section (b), Note 19.

21. Evvard, J. M.; Dox, A. W., and Guernsey, S. C.: The Effect of Calcium and Protein Fed Pregnant Swine on the Size, Vigor, Bone, Coat and Condition of the Offspring, Am. Jour. Physiol., 1914, xxxiv, 312.

22. Mendel, L. B., and Mitchell, P. H.: Chemical Studies on Growth. I. The Inverting Enzymes of the Alimentary Tract, Especially in the Embryo, Am. Jour. Physiol., 1907, xx, 81.

23. Calvary, M.: Die Bedeutung des Zuckers in der Säuglingsnahrung, Ergebn. d. inn. Med. u. Kinderh., 1913, x, 699.

are, of course, commonly found in greater or lesser abundance in every dietary; but to what extent they represent a permanently indispensable need of the animal remains to be learned. As has been pointed out elsewhere,[24] the reason why this apparently fundamental question in nutrition has not been answered before is presumably attributable to the experimental difficulties inherent in its solution. Fats or fat-like substances are present to some extent in the majority of the familiar food materials, from which they can be completely removed only with the expenditure of considerable effort and care; and the attempts to maintain animals on artificially prepared mixtures of isolated food substances have, until lately, met with little success.[25]

There is an added reason why it has been practically impossible to solve conclusively the question of the dispensability of the true fats. In food materials these glycerids are almost invariably accompanied by substances of similar solubilities and physical properties: phosphatids, cholesterol, pigments, etc., for which the heterogenous designation "lipoid" has been devised.[26] These are found in some quantity in every active cell; but although this fact suggests that some, at least, of the so-called "lipoids" have a preeminent biochemical importance it by no means follows that they are essential to the diet during growth or at other periods. They are synthesized by plant cells and it is not impossible to conceive of them likewise as being manufactured in the animal organism. McCollum[27] has demonstrated that the phosphorus needed by an animal for phosphatid formation can be drawn from inorganic phosphates, and that phosphatids can be synthesized anew in the animal body.

Röhmann[28] asserts the possibility of lecithin synthesis in mice which were maintained into the second generation on lecithin-free food.[29]

Renewed interest has been infused into the question of the rôle of fats as indispensable factors in the diet by the observations of Stepp.[30] In attempting to ascertain whether animals are dependent on their food supply for lipoids or can furnish them by synthesis like plants, he fed materials extracted with ether and alcohol to mice and observed the effect on the nutritive equilibrium of the animals. Obviously this method of preparing the food eliminated true fats from the diet at the same time. Stepp's observations and conclusions deserve to be carefully examined in connection with the problem at hand. He noted that without exception his mice succumbed in a few weeks when offered otherwise adequate food mixtures that had been thoroughly extracted. The deduction was made that the nutritive failure is due to the lack of certain "lipoid" substances, because the addition of alcohol-ether extracts of materials known to be rich in this type of compound sufficed to keep the animals alive. The lacking substance is assumed not to be inorganic, since the addition of the ash of the lipoid extracts made from the food material failed to maintain the mice. Furthermore—and this calls for emphasis here—the sustaining component is asserted not to be ordinary fat, inasmuch as the addition of so typical a fat mixture as butter failed to replace the missing life-sustaining factor. More recently Stepp[31] has reemphasized his belief that the alcohol-ether-soluble food components, in the absence of which mice regularly succumb, are not fats. They are said to be soluble in alcohol but not in ether.[32] Tripalmitin, tristearin and triolein did not resuscitate Stepp's malnourished mice.[33]

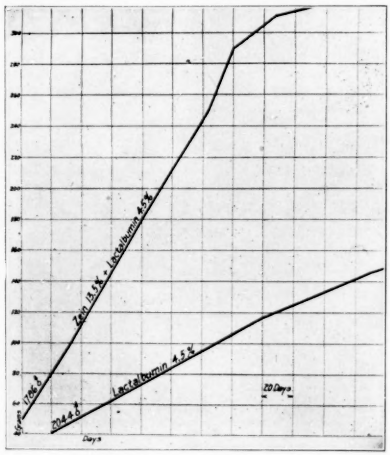


Chart 3.—Showing the favorable effect on growth by supplementing a protein (zein) incapable of maintaining animals when it is the sole protein furnished in the diet with a more "perfect" protein (lactalbumin). The proportion of the lactalbumin used—4.5 per cent.—was of itself insufficient to promote growth well. It evidently furnished the amino-acid groups lacking in the zein.

Some time ago Osborne and I[24] believed that we had obtained evidence of the dispensableness of true fats for growth of rats. Our foods for these experiments may presumably be designated as fat-free, even if it is perhaps not permissible to speak of them as "lipoid"-free; for according to the current definition, the so-called "lipoids" include sub-

24. Osborne, T. B., and Mendel, L. B.: Feeding Experiments with Fat-Free Food Mixtures, Jour. Biol. Chem., 1912, xii, 81.

25. Osborne, T. B., and Mendel, L. B.: Feeding Experiments with Isolated Food-Substances, Carnegie Institution of Washington, 1911, Pub. 156, Part I. (A discussion of earlier attempts in this direction.) See also Note 17.

26. For a general description of the so-called lipoids, their occurrence and possible biochemical significance, see Bang, I., Biochemie der Zelllipoide, Ergebn. d. Physiol., 1907, vi, 131; Biochemie der Zelllipoide II, Ergebn. d. Physiol., 1909, viii, 463.

27. McCollum, E. V.: Nuclein Synthesis in the Animal Body, Am. Jour. Physiol., 1909, xxv, 120; McCollum, E. V., and Halpin, J. P.: Synthesis of Lecithins in the Hen, Jour. Biol. Chem., 1912, xi, 13; See also Fingerling, G.: Die Bildung von organischen Phosphorverbindungen aus anorganischen Phosphaten, Biochem. Ztschr., 1912, xxxviii, 448.

28. Röhmann, F.: Biochem., 1908, p. 109; Ueber die Ernährung von Mäusen mit einer aus einfachen Nahrungsstoffen zusammengesetzten Nahrung, Biochem. Ztschr., 1914, (b), lxiv, 30.

29. The protocols (Section (b), Note 28.) merely show the absence of phosphorus-containing protein in the diet. The composition of the "margarin" always used is not given.

30. Stepp, W.: Versuche über Fütterung mit lipoidfreier Nahrung, Biochem. Ztschr., 1909, xxii, 452; Fütterungsversuche mit lipoidfreier Nahrung, Verhandl. d. Kong. f. inn. Med., 1911, xxviii, 324; Experimentelle Untersuchungen über die Bedeutung der Lipoide für die Ernährung, Ztschr. f. Biol., 1911, lvii, 135; Experimente über die Einwirkung langdauernden Kochens auf lebenswichtige Nahrungslipoide, Verhandl. d. Kong. f. inn. Med., 1912, xxix, 607; Weitere Untersuchungen über die Unentbehrlichkeit der Lipoide für das Leben, Ueber die Hitzezerstörbarkeit lebenswichtiger Lipoide der Nahrung, Ztschr. f. Biol., 1912, lix, 366.

31. Stepp, W.: Fortgesetzte Untersuchungen über die Unentbehrlichkeit der Lipoide für das Leben. Ueber das Verhalten der lebenswichtigen Stoffe zu den Lipoidextraktionsmitteln, Ztschr. f. Biol., 1913, lxii, 403.

32. Compare also Oseki, S.: Untersuchungen über qualitativ unzureichende Ernährung, Biochem. Ztschr., 1914, lxv, 158.

33. Cooper (Cooper, Evelyn A.: The Relations of Vitamines to Lipoids, Biochem. Jour., 1914, viii, 347) has lately suggested that the deleterious effect of lipoid-free diets observed by Stepp is due not to the deficiency of lipoid but to the mechanical removal of vitamin (to which reference is made later in the present paper) during the alcohol-ether extractions. The contribution of MacArthur and Luckett (Lipins in Nutrition, Jour. Biol. Chem., 1915, xx, 161) appeared after the preparation of this manuscript for publication.

stances soluble in hot alcohol which may not dissolve in ether. None of our isolated food materials were subjected to extraction with hot alcohol. Undoubtedly such treatment would remove other substances as well as lipoids from such a mixture as the "protein-free milk." Although the animals grew for some time on the "artificial" diets thus devised, subsequent experience leads us to believe that the experiments, though extending in some cases over four months, were nevertheless of too brief duration to permit a final answer. Sooner or later all the animals failed to grow further or thrive on such fat-free diets.

This nutritive decline does not, however, necessarily involve the lack of true fats, but presumably concerns a new and hitherto unappreciated aspect of nutrition in growth which deserves consideration in some detail. I refer to the part that may be played by substances which are not identical with the ordinary nutrients and which, despite the minimal amounts thereof present in the diet, may nevertheless be indispensable for growth and the maintenance of life. Hopkins has suggested the term "accessory diet factors"; Hofmeister, *akzessorische Nährstoffe;*[34] Funk, "vitamins" for the factors here involved.

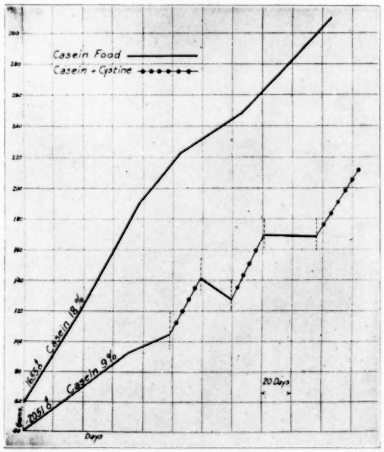


Chart 4.—The curve for Rat 1655 shows the satisfactory growth obtained when 18 per cent. of casein was present in the diet as the sole protein. With a smaller amount of casein (Rat 2051)—9 per cent.—much less rapid growth ensued. That the insufficiency of the smaller amounts of casein is essentially due to its relative deficiency in cystin-yielding groups is shown by the marked accelerating influence on growth brought about by the addition of the amino-acid cystin to the food containing 9 per cent. of casein and the prompt contrary effect when the cystin was withdrawn from the diet.

ACCESSORY DIET FACTORS—"VITAMINS"

It would take us too far from our immediate theme to review, at this time, the development of the evidence that beside the foodstuffs in the ordinary sense, there exist other constituents of our food which are of the very greatest importance for life.[35] The idea has largely been the outcome of the modern study of so-called deficiency diseases, notably beriberi and scurvy. It was scarcely possible to study the problem under ideal conditions until satisfactory methods were devised for feeding mixtures of isolated food substances with some degree of success. Like many new and suggestive hypotheses the "vitamin" theory has found a ready acceptance and has been applied in explanation of all sorts of pathologic manifestations, in some cases solely on the basis of analogy and quite in advance of any scientific evidence therefor.

The idea of the existence of accessory factors or specific requisites for growth has only of late taken a more concrete form. Friedenthal[36] has designated as "Mitosone" hypothetic products of internal secretion which accelerate the rhythm of cell division. This sort of factor concerns the food supply indirectly at best. The studies of Röhmann,[37] Hopkins,[38] Hopkins and Neville,[39] McCollum,[40] McCollum and Davis,[41] Funk,[42] Funk and Macallum,[43] and Osborne and Mendel[44] in particular have raised new questions in respect to the possible function of accessory diet factors or "growth vitamins" in growth. Briefly, they show that all attempts to grow animals on diets consisting of carefully purified isolated foodstuffs—not the highly complex food mixtures such as constitute the familiar rations of every-day life—sooner or later result in failure. The shortcomings of some of the supposed earlier successful experiments with such "artificial" diets, for example, mixtures of casein, fat, sugar, starch, and inorganic salts, were masked by the brief duration of the observations.

Both Osborne and I and McCollum and Davis[45] have experienced numerous instances of growth over periods of many weeks on diets similar to that just outlined; but growth invariably ceased if the trials were not interrupted too early; and the development was resumed as soon as suitable changes in diet were instituted. Röhmann,[46] who has achieved a considerable degree of success in inducing mice to *grow* as well as be maintained on mixtures of isolated foodstuffs, hesitates

34. Compare Oseki (Note 32), p. 160.

35. For the literature on this theme see Funk, C.: Ueber die physiologische Bedeutung gewisser bisher unbekannter Nahrungsbestandteile, der Vitamine, Ergebn. d. Physiol., 1913 (a), xiii, 124; (b) Die Vitamine, Wiesbaden, J. F. Bergmann, 1914.

36. Friedenthal, H.: Die Zeiten der Verdoppelung des Körpergewichts neugeborener Tiere. Arbeit a. Geb. d. exper. Physiol., 1911, ii, 200.

37. See Section (a), Note 16; also Röhmann, F.: Ueber künstliche Ernährung, Allg. med. Centralztng., 1903, (a), No. 1; Ueber künstliche Ernährung von Mäusen, Allg. med. Centralztng., 1908, (b), No. 9; Zur Frage der künstlichen Ernährung, Biochem. Ztschr., 1912, xxxix, 507; see also Section (b), Note 28.

38. Hopkins, F. G.: Feeding Experiments. Illustrating the Importance of Accessory Factors in Normal Dietaries, Jour. Physiol., 1912, xliv, 425.

39. Hopkins, F. G., and Neville, A.: A Note Concerning the Influence of Diets on Growth, Biochem. Jour., 1913, vii, 97.

40. See Note 27.

41. McCollum, E. V., and Davis, Marguerite: The Influence of the Composition and Amount of the Mineral Content of the Ration on Growth, Jour. Biol. Chem., 1913, xiv, 40; also Proc. Am. Soc. Biol. Chem., 1913, (a) ii, 128; The Necessity of Certain Lipins in the Diet During Growth, Jour. Biol. Chem., 1913, (b) xv, 167; Observations on the Isolation of the Substance in Butter-Fat Which Exerts a Stimulating Influence on Growth, Jour. Biol. Chem., 1914, (c) xix, 245.

42. Funk, C.: Studien über das Wachstum. I. Das Wachstum auf vitaminhaltiger und vitaminfreier Nahrung, Ztschr. f. physiol. Chem., 1913, lxxxviii, 352. See also Note 35.

43. Funk, C., and Macallum, A. B.: Die chemischen Determinanten des Wachstums, Ztschr. f. physiol. Chem., 1914, xcii, 13.

44. Osborne, T. B., and Mendel, L. B.: The Relation of Growth to the Chemical Constituents of the Diet, Jour. Biol. Chem., 1913, (a), xv, 311; The Influence of Butter-Fat on Growth, Jour. Biol. Chem., 1913, (b), xvi, 423; The Influence of Cod-Liver Oil and Some Other Fats on Growth, Jour. Biol. Chem., 1914, xvii, 401.

45. See Section (c), Note 41.

46. "Diese Futtergemische sind also für die Aufzucht junger Mäuse den natürlichen noch nicht vollkommen gleichwertig. . . . Worauf diese Unvollkommenheit der künstlichen Nahrungsgemische beruht, will ich nicht entscheiden. Ueberaus bequem ist ja die Erklärung mit Hilfe der Vitamine. Aber sind denn wirklich schon einwandfreie Beweise für deren Vorhandensein gebracht? Ich bin vorläufig mehr geneigt anzunehmen, dass in der von mir verwendeten künstlichen Nahrung zwar alle für die Ernährung und das Wachstum erforderlichen Stoffe vorhanden waren, aber dass das Mischungsverhältnis oder die Form der Nahrungsstoffe nicht derartig war, um die künstliche Nahrung der natürlichen vollkommen gleichwertig erscheinen zu lassen." (Röhmann, F. See Section (b), Note 28.)

to accept the vitamin hypothesis in explanation of the failures. He inclines to the possibility of an unsuitable relationship in the proportions of the nutrients used. Hopkins (1912) found that he could remedy the shortcomings of the "artificial" mixtures which he fed to rats by the addition of milk in quantities far too small to have significance from the standpoint of their contribution to the energy of the ration. Osborne and I[47] found in what we have termed "protein-free milk" a more satisfactory substitute for the less efficient salt mixtures or the ash of milk. This product contains, beside lactose and inorganic salts, very small amounts of unknown compounds. Our attempts to imitate the "protein-free milk" in an artificial way have, like those of Röhmann[47] (1903) and of McCollum and Davis[48] with salt mixtures, given limited growth at best, though in occasional instances this has been surprising in extent. For such exceptional successes one may offer the hypothesis that the young organism sometimes, if not always, possesses a store of the as yet unknown "chemical determinants" which suffice for some time in the absence of a suitable supply in the food intake. Sooner or later this becomes exhausted and nutritive equilibrium and growth cease. The organism does not synthesize the essential "vitamin," if we prefer to express the situation in terms of this hypothesis.

McCollum and Davis[49] summarize an extensive experience with rats fed on rations made up of purified casein, dextrin and salt mixtures from reagents by calling attention to a marked difference in the ability of individual animals to grow on such diets. They state that normal growth during a period of somewhat more than one hundred days can be attained only by exceptional individuals. Many fail entirely to grow, others grow at a rate decidedly under the normal; and McCollum and Davis believe that they have in such rations a means of measuring the vitality of individuals in a manner more satisfactory than any hitherto employed.

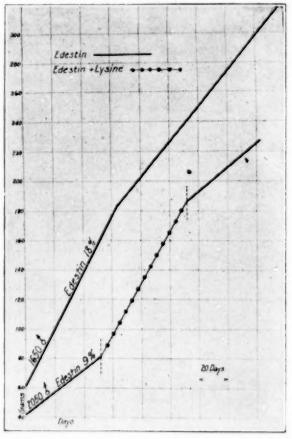


Chart 5.—The curve for Rat 1650 shows the satisfactory growth obtained when 18 per cent. of edestin was present in the diet as the sole protein. With a smaller amount of edestin (Rat 2050)—9 per cent.—much less rapid growth ensued. That the insufficiency of the smaller amount of edestin is essentially due to its relative deficiency in lysin-yielding groups is suggested by the marked accelerating influence on growth brought about by the addition of the amino-acid lysin to the food containing 9 per cent. of edestin and the less rapid growth when the additional lysin was withdrawn from the diet.

It does not follow directly, however, that the abnormality of the diet in such instances of failure of growth as have been referred to—whether we call it a lack of "vitamin" conceived to be organic in nature (with Funk), or attribute it to absence of some essential inorganic agent, or an inappropriate balance of the nutrients—inevitably involves the lack of a *growth* factor. Adequate growth postulates a satisfactory condition of maintenance before any continued gains in weight can be made. It might be supposed that milk, "protein-free milk" and other addenda to the ineffective "artificial" diets promote growth solely because they furnish something essential for normal metabolism, the basis on which tissue construction and expansion is superimposed.

This, however, is not the whole story. Osborne and I have kept rats through two generations on a diet consisting wholly of whole-milk powder, lard and starch. When we attempted to grow young animals on a comparable diet of isolated protein, "protein-free milk," carbohydrate and lard there was a suspension of growth, sometimes quite sudden and usually more gradual, before adult size was reached. The essential difference between the adequate and the inadequate ration just described lies in the absence of the milk-fat or cream element of the latter. We found that addition of unsalted butter[50] or of butter-fat[51] to the inadequate diets in which lard formed the sole fat component prevented the suspension of growth in ungrown rats and promptly restored growth when it had failed. Milk fat—which includes all the milk constituents soluble in the fats proper—therefore contains something essential for growth.[52]

Prior to the publication of our results McCollum and Davis[53] showed that the failure of rats to make further growth after reaching a "critical" point on mixtures of isolated food substances could be remedied by supplying the ether extract of egg or of butter. They state that rats in which growth was suspended may remain in an apparently good nutritive condition for many weeks and still be capable of responding to the growth-promoting effect of the ether-soluble substances as well as to the mixed foods of nature. McCollum and Davis in no case obtained a beneficial result by feeding lard or olive oil. To the instances of the favorable influence of butter fat and egg fat Osborne and I have added the equally satisfactory effect of cod liver oil and, in lesser degree, of beef fat. The results with the "efficient" fat mixtures (in contrast with the inefficient ones) are so striking and prompt as to constitute a unique demonstration of the potency of the hitherto unsuspected factors in diet. By fractioning butter-fat we have now been able to demonstrate that the more liquid portions (or what we may term the butter oil) contain the effective ingredient. That it is not universally present in natural oils has also been demonstrated alike by the observations of McCollum and Davis and our own evidence

47. See Section (a), Note 37.
48. See Sections (a) and (b), Note 41.
49. See Section (c), Note 41.
50. See Section (a), Note 44.
51. See Section (b), Note 44.
52. It has been said, in criticism of such conclusions, that the "accessories" merely represent something which induces a larger food intake with a more adequate maintenance or consequent growth, as the case may be. Obviously a failure to eat must result disastrously. We recognize the pertinence of such criticism and its applicability to many instances of nutritive decline; but the very extensive records which we have, show numerous cases of decline despite liberal food intake. The ideal plan of feeding measured quantities of food cannot be carried out satisfactorily on many species over long periods; even in birds, which can be "stuffed" with food, it meets with limitations.
53. See Section (b), Note 41.

of the inability of fats like almond oil and olive oil to replace the butter oil in promoting resumption of growth. The nutrition-promoting properties of cod-liver oil were tested, owing to the widespread popular and medicinal use of this product. Our experiments afford, we believe, direct evidence that cod-liver oil is something more than a mere nutrient. Experiments now in progress to ascertain how much butter oil is necessary to prevent nutritive disaster, or to induce restoration where decline has resulted, make the quantities appear to be surprisingly small.

Quite recently McCollum and Davis[54] have found that the property of inducing a resumption of growth in rats which have grown as far as possible on a fat-free ration, can be conferred on olive oil by shaking the latter with a solution of the soaps prepared by completely saponifying butter fat in a non-aqueous system with potassium hydroxid, according to the method of Henriques. The results indicate that the substance or substances present in butter fat which exert such a marked stimulating action on growth are sufficiently stable to withstand the conditions of saponification.

The beneficial effects of some of the fat additions manifest themselves not only in the resumption of growth but also in the alleviation of incidental nutritive disorders and evidences of lowered immunity to disease.[55] Experimental animals frequently develop an infection of the eye during the periods of their nutritive decline. This has been noted by various investigators and is perhaps represented by comparable phenomena in the malnutrition of children. The simple addition of butter fat or of cod-liver oil to the diet, without other change, leads to a prompt disappearance of the symptoms of eye disease.

No amount of butter-fat or cod-liver oil will induce growth on dietaries in which the proportions and nature of the inorganic salts are inappropriate, in which suitable carbohydrate is missing or the quantity and character of the protein is inadequate. The nutrient units—the *Bausteine*—must not be overlooked in our enthusiasm for the newer features. The work of Stepp, McCollum, and Osborne and Mendel agrees in indicating strongly that mere absence of fat from the diet is not the cause of suspension of growth; or rather we should say that the ordinary fats per se are not the substances which promote the growth. The naturally-occurring fats can dissolve substances other than triglycerids. The chemistry of the problem awaits solution.

THE DETERMINANTS OF GROWTH

It is not unlikely — to speak conservatively — that there are at least two "determinants" in the nutrition of growth. One of these is furnished in our "protein-free milk" which insures proper maintenance even in the absence of growth. When this was fed we have maintained rats without growth for very long periods. Without this "determinant" (as, for example, in diets of isolated food substances containing artificial substitutes for "natural" protein-free milk) the special components of butter fat or cod-liver oil or egg fat induce only limited gains at best. Another "determinant" is furnished by these natural fats (or fractions more recently prepared therefrom by Osborne and myself or the saponification product of McCollum and Davis). Either of the determinants may become "curative"; both are essential for growth when the body's store of them (if such there be) becomes depleted.[48] It is too early to attempt a tenable conclusion.

PRACTICAL APPLICATIONS

In the domain of practical medicine these recent investigations are likely to awaken fruitful speculation and beneficial applications. The popularity of the milk fats may be revived from a new point of view. Quite recently, and apparently without knowledge of the American studies in this field, Niemann[56] has advocated the use of washed butter as an adjuvant to the dietary of malnourished infants and has reported signal successes from its employment. The dietotherapeutic claims of cod-liver oil appear in a new light. The use of egg-yolk emulsion in the case of growing individuals finds justification. The claims of milk or fractions of milk such as whey, etc., to a place in the ration of the young are emphasized, as they always have been whenever proprietary infant foods containing milk products have been compared with those devoid of them.[57] The contrast of skimmed or cream-free milk with whole milk is brought into new relations.

Growth is more than a mere energy problem. Insufficiency of food and individual foodstuffs may be contrasted with *specific* deficiencies. We have yet to learn where the essential substances are to be found aside from the few products already mentioned. The possible potency of plant products remains to be ascertained. Even the question of unheated versus heated milk, and the problem of the influence of preservation by heat on canned foods may be concerned with the stability of the "accessory factors" toward physical agents. Perhaps in the refinement of modern food preparation we are dealing with an induced deficiency of actually known substances. One readily thinks of the possible rôle of traces of iodin or silica or manganese hitherto unrecognized.

With activators and hormones, vitamins and food accessories, mitosones and products of internal secretion brought to our attention day by day, I am conscious, in the midst of our enthusiasm, of a warning given by Rubner in a protest against the creation of a new scientific vocabulary and the danger of transforming the natural sciences into a play of words. "The science of nutrition," he says, "must never tolerate the substitution of unhealthy speculation for what is admittedly a laborious undertaking, namely experimentation."[58]

54. See Section (c), Note 41.
55. Page 431, Section (b), Note 44.

56. Niemann, A.: Ueber die Möglichkeit einer Fettanreicherung der Säuglingsnahrung, Jahrb. f. Kinderh., 1914, lxxix, 274.
57. Wheeler, Ruth, and Biester, Alice: A Study of the Nutritive Value of Some Proprietary Infant Foods, Am. Jour. Dis. Child., 1914, vii, 169.
58. "Es ist sehr bedauerlich, dass in der Literatur des letzten Jahrzehnts überhaupt sich an allen Ecken und Enden die Tendenz geltend macht, bei Experimenten, bei denen weder die wirksamen Substanzen, noch die physikalischen Bedingungen genauer bekannt sind, zu sofortiger Namensgebung schreiten. Aus den ersten Hypothesen werden weitere Hilfshypothesen mit wieder neuer Nomenklatur. Den Lesern kommt gar nicht mehr zu Bewusstsein, dass die Namen, die er hört, nur hypothetische Körper oder nur Namen für einen Vorgang sind, der vielleicht nur bei gewissem Quantitätsverhältnisse des Stoffes in die Erscheinung tritt, bei anderen nicht. Die allerwenigsten der Leser wissen heute noch die Genesis solche Worte. Der kleinste Teil kennt die Experimente, auf welche die Namensgebung zurückzuführen ist. Die einfachsten Binsenwahrheiten werden dann in der Form hochtrabender Spezialausdrücke zu neuen Errungenschaften, die Literatur ist heute auf manchen medizinischen Gebieten, man möchte sagen, ohne die Zuhilfenahme besonderer Lexika für Fachausdrücke und Synonyme ungeniessbar. Die Medizin muss hier endlich einmal wieder Halt machen. Hypothesenbau und Theorie haben auch ihr Gutes, sie dürfen aber nicht hypertrophisch werden und das klare durchsichtige Experiment verdrängen. Die Naturwissenschaft darf nicht in ein Spiel mit Worten sich verlieren. Am allerwenigsten ist es aber in der Ernährungslehre angebracht, eine ungesunde Spekulation an Stelle der allerdings mühseligen Experimente zu setzen." (Rubner, Note 9.)

THE USE OF HYPEREMIA IN THE POSTOPERATIVE TREATMENT OF LESIONS OF THE EXTREMITIES AND THORAX

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In calling attention to the use of hyperemia in lesions of the extremities and the thorax, it is my purpose to refer only to the use of that form of treatment known as suction or cupping. In order to be successful with it, it is necessary for a large portion of the extremity to be contained within the vacuum chamber. To successfully create and maintain a vacuum in so large a chamber as will completely envelop an extremity, it is necessary to attach some form of electrically propelled motor, which should be so adapted as to be thoroughly under control while creating the vacuum. Under such favorable conditions a sufficient vacuum may be maintained for a period which will allow of complete and uniform hyperemia of all of the extremity enclosed within the chamber. This means that the veins become fully engorged with new blood, the tissues bathed in the vital fluid, and bactericidal agents liberated, setting free a far more effective death dealing agent to bacteria than any chemical agent known to-day, to say nothing of the stimulating effect imparted to the tissues about the wound.

There are several lesions of the extremities in which I have found the use of the suction hyperemia to give very satisfactory results. One of these lesions is chronic varicose ulcer in all forms. By this description is meant the kind of varicose ulcer which often baffles all ordinary means of treatment and tries one's patience.

These cases all require a certain preliminary treatment, and I am in the habit of instituting hot, moist dressings, and the soaking of the extremity in very warm water at frequent intervals, during each day for at least two weeks prior to operating. This, of course, is hyperemia in one of its various forms, but this method only prepares the tissues for the subsequent work. After this preliminary treatment the tissues become soft and engorged with blood, and the granulations bleed quite readily. The patient is then anesthetized, the granulating surface thoroughly curetted, and the fibrous tissue cleared away with the scalpel. Incisions are then made in the fibrous and healthy tissues surrounding the ulcer, in order that blood may flow into the area which is to be grafted with new skin. After drying the tissues in the usual manner, large Reverdin grafts are taken from an adjacent portion of the extremity and placed in close proximity over the denuded surface of the ulcer. Narrow strips of guttapercha are now placed over this graft, running at right angles to one another, and over this one or two layers of rubberized mesh. On top of this are placed several layers of sterile moist gauze and the usual dressings are applied. The limb is now put in a light posterior plaster-of-Paris splint, and on the following day, without disturbing the dressings, the leg is placed in a large Bier's hyperemic boot and light suction applied. This treatment is continued about thirty minutes daily for three days. After this the dressings are removed daily, the surface washed with salt solution and the leg placed in the hyperemic boot for thirty minutes. The dressings are then reapplied, using first the guttapercha, then the rubber mesh and other dressings.

Under this method of treatment I have, so far, had about 90 per cent. of my grafts hold, and the period of convalescence has not exceeded eighteen days. At the expiration of this time a roller bandage is applied, painting it while so put on with a soft brush immersed in a gelatin preparation of zinc oxid (Unna's paste.) This makes a firm, elastic stocking, which fits the limb snugly and will not slip. This is left in position for at least six weeks following the patient's discharge. At the expiration of this time I am in the habit of having the patient fitted with an elastic stocking, in order to prevent, as far as possible, the recurrence of these ulcers in other portions of the same limb.

I have also been surprised and pleased with the results obtained by the use of this same vacuum hyperemia in the treatment of infected compound comminuted fractures of the extremities. Where the bones are in good apposition and anywhere about or below the elbow or knee, whether in a wooden splint or a snugly fitting plaster-of-Paris dressing, these extremities can be easily placed in the vacuum chamber, and daily suction hyperemia instituted. Each time the treatment is applied, the lacerated tissues and ends of the bone are bathed in blood and serum, these acting as bactericidal agents. Daily applications soon control the infection present and eventually leave a clot of fibrinated blood between the ends of the bone, thereby aiding osteoblastic proliferations. This same clot also aids very materially in hastening repair in the soft tissues. This method, if used for a period of thirty minutes daily, commencing immediately after the injury or operation, would probably reduce the period of disability and convalescence about 50 per cent.

While I[1] still strongly advocate the use of the open air methods in the treatment of burns, I am also strongly impressed with the use of this same hyperemic vacuum in burns of the second and third degree. Unfortunately, up to the present, this treatment can only be successfully applied to burns of the distal extremity.

For more than ten years I have been using hyperemia as a routine treatment in all my thoracotomies for empyema.[2] During this time I have had no cause to regret its adoption and have been strongly impressed with a number of good features in connection with the treatment, since it has given quite uniform results. First of these is the rapid and effective emptying of the chest cavity of pus and blood, which is accomplished through a medium sized opening. Second, the early and successful expansion of the lung as demonstrated by the Roentgen ray. Third, the early closing of the drainage site and the absence of postoperative sinuses with their annoying complications. These all make for an extremely short convalescence, which it has been my invariable good fortune to experience.

The site for the incision should be in the median line of the area of dulness, and at the most dependent portion. The incision should parallel one rib, of which 1½ or 2 inches should be resected. Two large drainage tubes are then inserted into this opening, and copious dressings applied, the patient having been in

1. Tennant, C. E.: The Fundamental Principles Underlying the Treatment of Wounds on the Body Surface, THE JOURNAL A. M. A., Dec. 10, 1910, p. 2025.
2. Tennant, C. E.: Ann. Surg., January, 1910, p. 85.

a sitting posture during the operation, and as near on the back as possible, in order that the sound side may have full freedom for its respiratory excursions. On the following day a large bell shaped cup, which not only encloses the tube, but the extreme margins of the incision, is placed on the chest and mild suction instituted for a period of fifteen minutes. Frequent inspection of the tubes should be made, for during the period in which the suction is used, these tubes will often become occluded with coagulated fibrin and one might therefore presume that the chest cavity was free from debris and pus.

With a long thumb forceps or a uterine dressing forceps these fibrinous plugs should be drawn out of the tubes as fast as they collect and suction renewed. I have collected as much as 2 ounces of this fibrinous material in one dressing. If one is careful to collect and remove this material during the first three or four days, there is little or no danger of a blockage from the chest discharge, and all tubes may be removed on the sixth day. Suction should be continued, however, twice daily, while the dressing forceps are used to separate the margins of the wound, until there is nothing but blood secured from the incision. This will occur, providing the treatment has been persistent and effective, in about twelve days after the incision is made.

In applying this treatment in thoracotomies I have found that so long as the patient is comfortable and suffers no pain while suction is being used, no harm will come from the negative pressure in the pneumothorax cavity; and when these patients are examined under Roentgen ray after the twelfth day, the lung will be found to have expanded sufficiently to obliterate the pyogenic space, and certain adhesions have probably formed between the parietal and pulmonary pleura which prevent further collapse of the lung.

612 Empire Building.

SOME UNUSUAL CHANGES IN THE VISUAL FIELDS

THE RESULT OF VASCULAR LESIONS IN THE BRAIN AND OPTIC NERVES *

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CASE 1.—*Permanent quadrant and hemianopic losses following so-called "migrainous attacks."*

Five weeks ago, I was asked to examine the eyes of a woman, aged 46, with a visual disturbance of several days' standing. It was stated that the patient had always enjoyed the best of health until the present attack, which she ascribed to the effects of a late supper of beer and Welsh rabbit, becoming overheated from dancing, and a cold ride home in a taxicab. The morning after these indiscretions, she awoke with a dull headache and blurred vision, and thinking herself bilious, took calomel and castor oil, without, however, procuring any abatement in her symptoms, the headache, which was chiefly centered over the right eye, and the loss of sight, which seemed to be confined to the same eye, still persisting. It was at this juncture that my advice was sought and an ophthalmic examination instituted. It needed but the most cursory test to determine that her visual defect depended on a right lateral homonymous hemianopsia, though this was resolved by perimetric test into a quadrant defect merely, the lower portion of both temporal halves being normal (Fig. 1). The fixation points and the nasal fields were also uninvolved. There were no accompanying sensory or motor disturbances, and cerebration was clear. The examination of the urine was negative. Corrected vision was normal in each eye and there were no changes in the extra-ocular or intra-ocular muscles. Both fundi were normal, save for marked signs of vascular sclerosis, the walls of both retinal arteries and veins being thickened and the vessels themselves unduly tortuous. In close association with the right inferior retinal artery, there was a small vascular new formation, one-fourth the size of the disk, which either marked the site of a previous hemorrhage or depended on an aneurysmal dilatation of the artery. The patient was confined to her bed with a low diet and quiet enjoined. It was elicited that although she had been in the habit of taking several cocktails daily and keeping late hours, her health had been of the best. She had never suffered previously from migraine or any form of head pain. After a week or more of absolute rest and liquid diet, alteratives were prescribed and more freedom in her movements tolerated. There was no recurrence of the head pain, but the loss in the field of vision still persisted. This may be ascribed, in all likelihood, to definite changes produced in the visual cells of the left cuneus, in consequence of an interference with their function from intestinal toxemia, either from hemorrhage or by reason of the formation of a thrombosis in the terminal artery supplying them, or as a result of prolonged spasm of the walls of the vessel.

A careful search through the literature revealed a number of somewhat analogous cases. Of these, Hun's[1] is the most instructive. In this instance a homonymous loss in the lower left quadrant of each eye was found at necropsy to have been occasioned by an atrophy of the lower half of the right cuneus (Figs. 2 and 3). This case occurred in a man, aged 57 years, of extremely nervous temperament. The visual affection came on during an attack of vertigo and mental confusion, after several premonitory spells of a somewhat similar nature. Death occurred two years later from angina.

From an inspection of the plates in Seguin's article which represent the cortical lesions which have been found in cases of hemianopsia, Hun was forced to the conclusion that the fibers from the right upper quadrant of each retina have their final termination in the lower half of the right cuneus, and the fibers from the right lower quadrant of each retina terminate in the adjacent part of the right median occipitotemporal convolution. Of course the same relationship holds good between the left half of each retina and the left cuneus and left median occipitotemporal convolution.

Spiller[2] quotes a case of quadrant anopsia, reported by Beevor and Collier,[3] with necropsy and careful microscopic study, which is exceedingly valuable in determining the location of the cortical lesion causing quadrant anopsia. The only symptom of nervous disease was blindness of the left upper quadrants of both visual fields, the fixation point escaping. This condition remained constant nearly two years. Necropsy showed that an occlusive lesion of the right posterior calcarine artery had caused destruction of the cortex (1) of the right fusiform lobe for its posterior two centimeters, (2) of the right lingual lobe from the junction of the calcarine and parieto-occipital fissures

* Abstract of paper read by invitation before the Section on Ophthalmology and Otology of the Baltimore City Medical Society, Feb. 17, 1915.

* Because of lack of space, a considerable part of this article, including the fields, is omitted from THE JOURNAL. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Hun: Am. Jour. Med. Sc., January, 1887.
2. Spiller: The Eye and Nervous System.
3. Beevor and Collier: Brain, 1904.

to the pole of the hemisphere, (3) of the whole cortex in the depth of the calcarine fissure, (4) of the greater part of the inferior cuneal gyrus, small areas only at the anterior and posterior limits of this gyrus being free. The necrosis did not involve the optic radiations at any point. The only parts of the cortex of the mesial aspect of the occipital lobe which had escaped destruction were the upper two thirds of the cuneus and the anterior and ventral portion of the fusiform gyrus. As the lower quadrants of the visual fields were entirely uninvolved, the left upper quadrants alone being affected, it would appear from this case at least that the cortex of the upper two thirds of the cuneus is the visual center for the lower quadrants.

The cortex lining the calcarine fissure was completely necrotic. Beevor and Collier think, therefore, that the primary half vision center cannot be limited to the calcarine cortex, nor the macula be exclusively represented in the anterior portion of this region. Spiller is of the opinion that the consideration of this case modifies the sharp distinctions made by Henschen in the relation of the upper and lower fields to the calcarine fissure, for the necropsy would seem to indicate that the lower part of the retina appears to be represented in the upper lip of the calcarine fissure.

In 1894, Weymann[4] described a case in which the defects in the visual fields consisted of homonymous quadrant losses in the upper left field, and similar defects in the lower right field of each eye (Fig. 4). The loss in vision in this instance occurred in a syphilitic adult male, and dated from an attack of unconsciousness followed by right hemiplegia. Later speech became thick and unintelligible, and the mentality seemed at times entirely suspended. There was incontinence of feces and urine. Mixed treatment brought about a marked improvement in all the symptoms, enabling the patient to resume his occupation of dancing master. The defects in the visual fields, however, remained unchanged. Weymann thought them to be dependent on a lesion in each cuneus.

In another case of left quadrant hemianopsia, reported by Gowers, in which the loss in the field was complete for color, but partial only for form, there was associated left hemiplegia. Necropsy showed each cuneus to be normal, but a patch of softening was found in the right internal capsule. Gowers suggests that a partial lesion may have temporarily damaged the whole half vision center, or possibly injury to the optic radiations may have cleared up partially, leaving the fibers of one section destroyed.

Homonymous quadrant defects in the visual fields are of rather rare occurrence from any condition.

More often the visual loss consists in a full hemianopic defect, as exemplified by the following:

CASE 2.—In May of last year, Mrs. F. W. B., aged 33 years, was referred to me by Dr. C. H. Frazier, on account of a loss in the right field of vision. This had followed an attack of severe pain in the left side of the head, accompanied by loss in sensation and motion of the right arm and leg. Sensation returned in the paralyzed side about two hours after the attack, and motion some time later, but the visual defect persisted. Following the attack she stated she experienced from time to time a peculiar kind of headache, which she described as a creeping sensation, which began in the occiput and slowly extended to the vertex. Two months prior to the examination, during a spell of severe localized pain in the right side of the head, she thought that there had been a partial return of sight in the outer part of the right field of vision. She ascribed her head symptoms to typhoid fever, which was followed by a posttyphoid infection of the gallbladder. A number of gallstones had been removed by operation, but a fistula remained which demanded a second operation for its healing. The examination of the eyes was negative, save for the changes in the fields, which consisted, as may be seen by the accompanying charts (Fig. 5), of right homonymous hemianopsia. Though complete in the left eye, the hemianopic area in the right eye was incomplete, for in the extreme temporal periphery a small island of uninvolved field area could be distinctly mapped out with a 10-mm. white object. A second perimetric test made two months later gave similar findings. In a recent letter, the patient stated that her general physical condition had improved. There had been no return of the head pain, but she was unable to note an improvement in her sight. She writes, "The spot of sight in the right eye (the uninvolved area in the periphery) is slightly larger, but the big shadow is spreading left toward the center of the eye." The case was regarded by Dr. Frazier and Dr. Spiller, who was also seen in consultation, as one of migraine with persistence of the hemianopic defects in the field. Dr. Spiller located the lesion near the left internal capsule, implicating the optic radiations and interfering temporarily with the sensory and motor fibers in the internal capsule, probably by vascular disturbance and resulting congestion. The possibility of thrombosis must, however, also be considered.

4. Weymann: Am. Jour. Ophth., October, 1894.

To this case a number from the literature may be added, and as some of these came to necropsy, considerable light is thrown on the sublying pathologic lesion causing the hemianopsia.

Of these, the case most referred to is that of Hoeflmayer, who noted the persistence of hemianopsia for a month in a woman aged 57, who had frequent attacks of migraine for forty years. The hemianopsia apeared after a prolonged attack, in which the patient lay in a stuporous state for ten days. The hemianopsia cleared gradually, at first the outline of objects being seen dimly and then more and more clearly, until normal fields of vision supervened. Hoeflmayer thought the condition a toxic one, added to a neurasthenic exhaustion.

Févé's case of a woman aged 34, of permanent hemianopsia with preceding evanescent attacks of vertigo and hemiplegia, was doubtless due to organic cerebral disease; also Charcot's, of a patient who a year before, in consequence of an attack of hereditary migraine with temporary aphasia, was left with hemianopsia, which did not disappear. Migraine attacks of less severity continued at longer intervals.

In Noyes' case, that of a man aged 52, severe attacks of migraine with vomiting had occurred frequently during ten years. Finally, in a sharp attack, after violent vomiting, typical left lateral hemianopsia followed, with a concentric limitation of the nasal half of the field of the left eye. Death occurred three years later from cerebral hemorrhage. A clot was found in the right cuneus.

In a case of ophthalmic migraine seen by Huguenin, with hemianopsia and aphasia, an obliteration of the artery of the fossa of Sylvius was found at the necropsy. To these may be added three additional cases by Thomas of Boston. The first one seemed, from the history, the absence of heredity and the nature of the attack itself, to have been due to arterial disease, and it is probable that the migraine attack was no more than an exciting cause for the vascular lesion, and possibly only a symptomatic migraine. Thomas

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thought the second, and particularly the third case, to be clear instances of cerebral softening ascribable to atacks of migraine. In the second case the presence of sugar in the urine was only temporary, it being absent in two later examinations, and present only at the first test, so that it was probably symptomatic only. In neither case was there any evidence of kidney, heart or arterial disease, or of syphilis.

As appears from the foregoing, there is ample evidence in the literature that migraine may be the exciting cause of organic brain disease, and that an area of softening of the brain may follow, which may manifest itself by a permanent paralysis, aphasia or hemianopsia. While such lesions usually occur in individuals who are predisposed in consequence of disease of the walls of the blood vessels, it would seem that in certain cases the vascular lesion may occur in young persons and even in some adults with healthy vessels. Caution, however, must be observed in ascribing even an exciting rôle to migraine in cases of organic brain disease, as it is not unlikely that independent disease of the blood vessels is responsible for the resultant symptoms, and the migraine merely coincident.

Finally, before closing the subject of migraine, I will cite the history of a case which is of interest on account of the presence of a hallucination in the blind area, and also because of the fact that I had the opportunity of obtaining careful fields at the height of an attack.

CASE 3.—This case occurred early in my professional career, about twenty years ago, and was described in a paper entitled "Visual Perceptions as Symptoms of Disease." An abbreviated account of the case is as follows: After a number of ordinary migrainous attacks, the patient, a neurotic woman aged 30, suffered one rather more severe, in which she saw a large blue eye the size of a bull's in the dark area of the field of vision. The eye was in rapid motion and was projected to the right on her blind side and was visible even with closed eyes. Its appearance was succeeded by an intense throbbing pain in the left temporal region. Synchronously she had a sense of numbness in her right side from the shoulder down. After persisting a few minutes, the eye would disappear, but would reappear about every twenty minutes. The fields, which were taken at a period when the scotoma was present, showed a partial right inferior temporal quadrant loss (Fig. 6).

A few days later she returned with another attack, when a second perimetric study was made. These assumed a different type from those first made, the defect being now on the left side (Fig. 7 *A*). It was only when the headache was most intense that the scotoma was positive, for at other times objects could be seen in it, although with changed appearance. For example, the white quadrant of the perimeter would often appear bisected, or, again, one corner would be cut off; again, it would seem very minute, and at times it would be lost altogether. Colors were not perceived in the area of the scotoma. Directly after this field was secured, the right eye was bandaged, and the field of the left eye studied. Here the scotoma was directly below, and presented the same characteristics as that of the fellow eye. When the scotoma left the field, it could always be reproduced by testing the field in that position. On the tendency which the scotoma had to shift about being remarked, the field of the right eye was taken once more, as shown in Figure 7 *B*. The scotoma was now in the inferior portion of the field, and corresponded to that which was observed in the left eye. It is interesting to note the rapidity with which the scotoma shifted itself about. Although taken very carefully, the fields were rapidly obtained by the McHardy perimeter, so that not more than half an hour was consumed in obtaining the two. When the tests were being made, the patient was perfectly calm and collected, and there were no manifestations of vasomotor changes in the face. At no time did the scotoma involve the fixation point. It was curious to note the way in which the patient described the object when viewed in the affected area. At times it would appear glistening white and rapidly fade out of sight, and then again it would have the peculiar distorted outlines just referred to. At times the white object would appear red, again blue, and then a variety of colors.

CASE 4.—*Left eye blind from thrombosis of central artery of the retina. Temporal field of right eye lost from cerebral apoplexy, right nasal field alone remaining.*—I have had under my care for many years an old lady, now 90 years of age, who typifies to a marked degree the consequences which extreme vascular disease may have on the eyes. Ten years ago, the sight of the left eye was suddenly lost from stoppage of the central artery of the retina. As there had been pronounced changes in the retinal vessels for years, the interruption of the blood current was thought to be due to thrombosis, though the premonitory, transient attacks of blindness which usually accompany that condition were absent. Although seen a few days after the loss of sight had supervened, there were no changes discernible in the fundus, with the exception of a marked diminution in the size of the blood vessels. Several years later she suffered a right hemiplegia, with a loss of the temporal field of the right eye, leaving her with but the nasal half (Fig. 8). This field is becoming more and more restricted from an atrophic condition of the nerve, which is apparently due to local arterial sclerosis.

An example of probable pressure atrophy of the optic nerve from sclerosis of one of the larger vessels in association with the nerve, more likely the ophthalmic artery, is the case of Mrs. T., now in the nineties, who first consulted me about fifteen years ago, on account of loss of vision in the left eye. This had come on, she thought, rather suddenly several months before. As shown by the accompanying field (Fig. 9), the visual defect was found to consist in a complete nasal hemianopsia, with preservation of fixation. The nerve was pale, bluish-white and avascular, and the retinal vessels much diminished in size. Corrected vision equaled 5/12. The right eye was normal, save for signs of pronounced arteriosclerosis, both in the nerve and retinal vessels. There was no limitation of the field of vision. This case has been under more or less constant observation ever since and the fields have remained unchanged, the hemianopic field still persisting, and no other limitation being remarked in the remaining field of the left eye, or in that of the right. Central vision still remains as at the first examination.

CASE 7.—*Right homonymous hemianopsia confined to the macular regions from blocking of an end artery in or near the cortical center of the visual area.*

A rare lesion in the fields is that of a hemianopic defect confined to the macular regions. I have seen but one case of this kind, which I have already reported elsewhere.[5] This occurred in a man aged 56, a sufferer from rheumatoid arthritis for many years, whose disturbance in vision occurred in association with some dizziness and confusion of mind and speech. These symptoms cleared away after several days, and the only resultant disability seemed to be in reading from type, distant sight appearing normal. A careful functional examination of the eyes showed them to be normal in all respects save for a loss of vision in the macular region of both eyes, as per fields (Fig. 10). Corrected distant vision was normal. This condition persisted until the death of the patient a year later from apoplexy.

Wilbrand is of the opinion that the scotomas under consideration appear when an end artery in or near the cortical center of the visual area becomes blocked up, and believes that the calcarine artery, which runs in a deep fissure on the medial side of the occipital lobe, supplying the largest and most important of the visual radiations, is the vessel chiefly implicated.

5. Posey, W. C.: Ophth. Rec., May, 1908.

TETANUS AND ANTITETANIC SERUM

WITH NOTE ON THE COMPLICATIONS AND LATE DEATH IN TETANUS *

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Within the past two years, new evidence as to the efficacy of antitetanic serum in developed tetanus has been obtained from animal experiment by Permin and by Park, and from carefully gathered hospital statistics. From this evidence it seemed likely that if antitoxin were given so as best to meet the pathogenesis of the disease (that is, by intraspinal and intravenous routes in massive doses at the earliest possible moment), the course of developed tetanus could be favorably modified, and the mortality materially reduced.

The probability that, within a few months, statistics of large numbers of cases in the war zone will be available, makes one hesitate to attempt generalizations on data insignificantly small in comparison. The encouraging results obtained in Cook County Hospital in 1914 are of interest, however, in showing what can be accomplished on the rather unfavorable material of a metropolitan hospital.

In May, 1914, in a report to the staff, the results of the use of antitetanic serum for the years 1908 to 1913, inclusive, were summarized. The combined mortality of all (fifty-three) cases was 81.4 per cent.; the mortality of serum treated cases, 75.6 per cent. In fifteen cases receiving antitoxin in adequate dosage, but often relatively late in the disease, the mortality was 53 per cent.; thirty cases received small doses, with a mortality of 87 per cent., approximately the same as that of eight cases treated without antitoxin, in one of which, with an incubation period of six weeks, the patient recovered (87 per cent. mortality). The high mortality of tetanus in Cook County Hospital, either with or without serum, has been attributed by some to the late institution of treatment and the unfavorable condition of many of the patients who apply for treatment at the hospital, and by others to assumed inadequacy of antitetanic serum to modify developed tetanus.

In 1914, fourteen cases of tetanus were treated with antitoxin by combined intraspinal and intravenous methods, with a mortality of 57.1 per cent. This mortality is about 20 per cent. lower than that of the previous six years, 75.6 per cent., in the same unfavorable class of patients. By reference to the table, it will be seen that, as a rule, patients reached the hospital and received treatment only after the lapse of two or more days from the appearance of symptoms of tetanus. Two patients were moribund on admission and died less than twelve hours later. If we omit these cases in which treatment was delayed till death was impending, the mortality of the remaining twelve cases is 50 per cent. The latter figure, however, does not represent the percentage of cases in which the disease was modified, for in two other cases, to be referred to later, death was attributable, in part at least, to complications after the symptoms of tetanus had subsided.

Conclusions based on this relatively small number of cases are necessarily open to question; but the fact that a previous mortality of 81.4 per cent. in all cases, and of 75.6 per cent. in serum treated cases, has been reduced in the same class of patients to slightly over 50 per cent. when serum was used with due regard to the pathology of the disease, must be given some weight in estimating the value of antitetanic serum as a curative agent.

Clinical observations of the course of individual cases has a limited but definite value, particularly when numbers of cases are studied. The patients of this series who recovered suffered from severe tetanus, and in two, convulsions occurred while first treatment was being given. The longest incubation period was fourteen days, the shortest four days, the average ten days, and this group included two cases of head tetanus with incubation periods of four and seven days, respectively. The total antitoxin given was from 17,000 to 35,000 units, with an average of 23,500 per case. This relatively small amount was given in such a way as to get the maximum effect at the earliest possible moment, that is, by intraspinal and intravenous injection.

INFLUENCE OF PYOGENIC INFECTION ON MORTALITY IN TETANUS

The effect of sepsis developing in lacerated wounds coincident with tetanus deserves more consideration than it has thus far received in estimating the successes and failures of antitetanic serum. In compound fracture and extensively lacerated wounds, streptococcal infection alone may be sufficient to kill the patient, even though he had no tetanus; thus, in one of the fatal cases with compound fracture of both bones of the leg, there was an extensive lymphangitis extending to the hip, with the symptoms of severe sepsis and delirium, a picture not seen at the onset of the uncomplicated tetanus. Yet this death must be charged against the method.

LATE DEATH IN TETANUS

Two instances in which death occurred after patients were apparently convalescing from tetanus deserve mention, because they recall the late deaths from tetanus described in preantitoxin days, and suggest an analogy with diphtheria, in which the introduction of antidiphtheric serum caused an apparent increase in postdiphtheric paralysis because more severe cases lived to develop them.

CASE 1.—An obese woman, aged 60, who developed tetanus following a stab wound of the arm, was admitted and received intraspinal and intravenous antitoxin on the fourth day of symptoms. On two occasions, severe reactions followed the giving of serum. On the eighth day after admission, and the twelfth day from the onset of the tetanus, the jaw was relaxed, other muscular rigidity had disappeared, the temperature was normal, and the patient appeared to be convalescent. The respirations then became more rapid, with fever, rapid pulse, and dulness and râles over the base of both lungs, with death four days later. At the necropsy, pneumonia was found. In this case, while the tetanus no doubt was a contributory cause of death, the outcome cannot be justly charged as a failure of antitoxin to modify symptoms of tetanus. The age (60), the obesity, the injury to the heart muscle during the course of tetanus, and the secondary infection with localization in the lung, probably all had a part in determining the fatal result.

CASE 2.—A man, aged 65, received first antitetanic serum on the third day of tetanus, which developed nine days after a contused wound of the chin, sustained by a fall and blow on the head. On the sixth day after the first treatment, and the ninth day of tetanus, when the muscular rigidity was decreasing, he died in a sudden convulsion. At the necropsy,

* From the Medical Department of Cook County Hospital.

hernia of the foramen magnum was found. There were also old stellate scars in the liver and spleen. While this case terminated with a convulsion, as do many cases of tetanus, the relatively slow pulse of good quality, and the sudden convulsion after a period of apparent improvement, were unusual, and suggested some influence of pressure on pons and medulla. There had been no withdrawal of cerebrospinal fluid for forty-eight hours previous to death.

These deaths are chargeable to tetanus as the primary cause, but the complications should be taken into account in judging the power of antitetanic serum to modify the course of tetanus.

The case for antitetanic serum may be viewed from another angle. Some patients with tetanus recover spontaneously (from 10 to 15 per cent.). These are usually chronic cases in which the formation of tetanospasmin is so gradual that time is afforded for the development of antitoxin in the body of the patient. Other patients suffer the first symptoms within two or three days, and die with severe acute tetanus. Between these two extremes are all grades of rapidity and severity of tetanic intoxication, and in many, recovery can occur if the toxin is neutralized early enough. Obviously, the proportion of possible cures decreases, the longer artificial neutralization of toxin is delayed. Free toxin in the blood is neutralized by a single large intravenous injection. A portion of toxin which has already entered the nervous system can be neutralized by intraspinal injection, as demonstrated experimentally in animals.

TETANUS TREATED BY ANTITETANIC SERUM

File No.	Age	Injury	Incubation	Duration of Symptoms Before Treatment	Duration of Life After Treatment	Serum Amounts*	Total Serum Units	Remarks
RECOVERIES								
30	52	Operation, hernia	13 days	2 days	.....	8,000 I. S. 22,000 I. V. & I. M.	30,000	Tonic and clonic spasms on admission.
26	22	Crushed finger	14 days	4 days	.....	8,000 I. S. 13,000 I. V. 11,500 Subcut.	32,500	
25	32	Wound of head	7 days	5 days	.....	7,500 I. S. 20,000 I. V. 10,500 I. M.	38,000	
23	22	Wound of head	4 days	2 days	.....	3,000 I. S. 9,000 I. V. 6,000 Subcut.	18,000	
22	15	Circumcision	10 days	4 days	.....	6,000 I. S. 3,000 I. V. 2,000 I. M. 6,000 Subcut.	17,000	Convulsions on admission.
19	25	Cut hand	12 days	2 days	.....	24,000 I. V. 11,500 Subcut.	35,500	
DEATHS								
27	12	Puncture heel	12 days	2 days	3 days	11,000 I. S. 16,000 I. V.	27,000	Convulsions on admission. Marked rigidity.
20	34	Crushed heel	8 days	12 hours	5 days	9,000 I. S. 36,000 I. V. 3,000 I. N.	48,000	No serum intraspinally till third day of treatment.
18	34	Compound fracture, ankle	5 days	12 hours	2 days	3,000 I. S. 9,000 I. V. 12,000 I. M.	24,000	Extensive lymphangitis to hip, and delirious at onset of tetanus.
31	60	Stab wound, arm	12 days	4 days	13 days	10,000 I. S. 20,000 I. V. 5,000 Subcut.	35,000	On eighth day of treatment and twelfth of tetanus, muscles relaxed, apparently convalescent. Signs of pneumonia. Died four days later. Necropsy, pneumonia.
21	65	Wound of chin, fall	9 days	3 days	6 days	6,000 I. S. 13,500 I. V.	19,500	Died in convulsion on ninth day. Necropsy, hernia foramen magnum.
33	24	Frozen toes	5 days	24 hours	7 hours	5,000 I. S. 15,000 I. V.	20,000	Severe rapid tetanus. General rigidity before treatment.
29	8	Puncture wound, foot	17 days	4 days	7 hours	3,000 I. S. 10,000 I. V.	13,000	Moribund on admission.
24	2	Vaccination	21 days	2 days	7 hours	3,000 I. S. 9,000 I. V. 12,000 I. M.	24,000	Moribund on admission.

* I. S., intraspinal; I. V., intravenous; I. M., intramuscular.

ANAPHYLACTIC SHOCK

The danger of anaphylactic shock from intravenous injection of serum deserves consideration, and, in a disease less serious than tetanus, might well make one hesitate to give serum in large doses intravenously. In several instances I have seen immediate reactions with rapidly developing urticaria and increased respiration, which subsided in a few hours; but in none of these was the reaction fatal.

One case, not included in these statistics, presented the phenomena of severe serum reaction, so that further intravenous treatment had to be delayed for several hours, and later resumed after complete desensitization was determined by the method of Besredka.

CASE 3.—The patient was a man who received a prophylactic injection of 1,500 units two days after a puncture wound of the heel. Ten days later he developed a severe tetanus. He was given a subcutaneous injection of 1,500 units by a local physician, which was followed by a moderate urticaria. Eight hours later, on arrival at the hospital, he was given 5 c.c. of serum intravenously, on the assumption that sufficient time had elapsed since the dose in the morning, followed by the immediate cutaneous reaction to render him insensitive to further serum. However, an immediate severe serum reaction followed the second dose, with urticaria, rapid respiration and pulse. The severity of the tetanus made us feel that unless something further could be done, he would surely die of tetanus. We prepared a 10 per cent. solution of antitetanic serum in salt solution, and injected 10 c.c. intravenously, very slowly, watching carefully the pulse, blood pressure and respiration. There was no further reaction, and the full

dose of 20,000 units was then given intravenously, and 5,000 units intraspinally without a trace of serum reaction. Surgical treatment of the wound and sufficient sedatives to control spasms completed the treatment. The patient recovered.

PROPHYLACTIC USE OF SERUM

Antitoxin contained in serum derived from one species of animal is more rapidly eliminated after injection into an animal of another species, than if injected into one of the same species. A prophylactic dose of 1,500 units in man will not surely protect against tetanus longer than from ten to twelve days, and if the original wound is not entirely healed, the subcutaneous protective dose should be repeated.

SUMMARY

From animal experiments, and the results in veterinary medicine, it is evident that antitetanic serum will save animals in which tetanus has already developed. Clinical observations and carefully compiled statistics of tetanus in man indicate that the course of tetanus can be modified, and in many instances life saved by proper use of antitetanic serum.

The frequent delay in giving antitoxin, after symptoms of tetanus have appeared, the complications of sepsis in lacerated wounds, the occurrence of late death from indirect complications, and the totally inadequate methods of use of serum, have served to cast doubt hitherto on the curative value of antitetanic serum.

The frequently employed method of giving small doses subcutaneously every few hours, and gradually increasing the dose as the symptoms advance, disregards entirely the pathogenesis of the disease, is wasteful of an expensive remedy, and is usually without therapeutic result.

If the patient is seen early, before fatal intoxication of the central nervous system has already occurred, prompt neutralization of all free toxin in the circulating blood by large intravenous injection, and the neutralization of a part of the toxin already in the central nervous system by intraspinal injection, combined with the judicious use of sedatives, and other indicated medical and surgical measures, will save a considerable number of patients who would otherwise die.

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The Danger of Quack Medicines.—There are two very good reasons why these tempting baits should be avoided: first, because proprietary medicines rarely do any good, and second, because they often do very serious harm. Tuberculosis may frequently be cured by proper treatment in a sanatorium or hospital; cancer by a surgical operation, but neither of them by drugs. The sad part of it is that while ignorant and foolish people are trying to treat themselves by drugs, the time when a real cure could be effected often passes by and when at last they call the physician it is too late. This is not the worst of it, however, for many proprietary medicines are not only fakes, but, worse, they often contain dangerous poisons or habit-forming drugs. The "soothing syrups" are rightly known to physicians as "baby-killers" for their active principle is usually morphin or opium, and headache cures often contain such powerful and dangerous drugs as acetanilid or phenacetin. The spring medicines, tonics, bitters, sarsaparillas, etc., are often strong alcoholic drinks as harmful for habitual use as whiskey or gin. . . . If you do not feel well and need medicine, consult a skilled physician and don't pay tribute to the Great American Fraud —the patient medicine faker.—New York *Health Almanac*, January, 1915.

NON-TUBERCULOUS PULMONARY SUPPURATIONS

THEIR MEDICAL AND SURGICAL RELATIONS *

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There is one great debt which the internist owes to the surgeon, which he never acknowledges or even considers. I refer to the fact that whenever a surgeon annexes any new territory to his domain in the attempt to cure diseases which have defied medical skill, he always associates his mechanical technic with the demand that the diagnosis and differential diagnosis of the lesions shall be made more precise and exact; and to his great honor be it said that he contributes in no small measure toward attaining this end. The reason for this is not far to seek. These so-called incurable cases offer very little inducement to most physicians for careful study, and once the diagnosis is made, the poor patient is consigned to his fate, with such routine palliative treatment as his symptoms may require. How different is the point of view when a disease is no longer considered hopeless! An intensive study is at once begun on all sides. From being relegated to the youngest assistants, these patients are eagerly sought. Doubtful points are investigated; differential diagnoses are sharply defined; the cases are classified; the requisite surgical procedures and technic are soon proposed; successful operations are reported, and the new surgical territory is thus annexed.

The latest field of surgical activity in the lungs has been no exception to this rule. There has been one difference, however, in that the internists themselves were the pioneer surgeons. I refer to the operations of Mosler, Quincke, Lenhartz and Brauer. It was the internist Lenhartz who really inaugurated pulmonary surgery on a large scale, and no surgeon to this day has ever equaled his activity.

The object of this paper is to make a plea that the general practitioner should seriously think of the surgical possibilities of all cases of non-tuberculous suppuration. The surgeon is right in urging that he be given a suitable opportunity to operate on these patients as early as possible, and not when it is too late to do much—before the disease has progressed so far that the poor condition of the patient and the extent of the lesions render any operation almost hopeless. Coughing up pints of pus daily for months drains the patient, subjects him to the risk of amyloid degeneration and weakens the heart so much that he becomes a poor surgical risk.

There is no lack of patients who could be benefited by the new pulmonary surgery. The miserable lives which many of these poor people live—veritable lepers, whose stinking expectoration and horrible fetor cause them to be shunned by all—should appeal to us to do something for them in the way of help. Not a few of them are to be found in the tuberculosis sanatoriums under faulty diagnosis. In every dispensary class we may find them. The surgeons' progress requires the internists' active cooperation. The problems which must be solved are often extremely difficult. Pulmonary surgery will always remain in the hands of the advanced surgeon; but even in his skilful

* Read before the Harlem Medical Society, March 3, 1915.

hands the progress will largely depend on these operations being made a matter of choice rather than of last resort.

To recognize these cases it is essential that physicians should be more progressive in their methods of diagnosis. They must not lay so much stress on their stethoscopes and fingers. In acute diseases like pneumonia, it does not matter much whether the exact area of infiltration is definitely marked out, and by the way, who ever saw the consolidation of the lobes distinctly marked out as they really are with oblique lines?

Physical diagnosis of the lungs is based on acoustic phenomena which are related to the presence of air. In pulmonary suppuration the conditions are usually very complex. The access of air to the diseased area is often interfered with because the bronchi may contain more or less secretion, the lung tissues may be infiltrated or may be atelectatic. Moreover, the pleura may be thickened or its cavity may contain fluid or air, or both. Then, too, the movements of the diaphragm may be more or less interfered with, and finally the thoracic viscera may be displaced. No method of physical diagnosis can always correctly interpret such a maze.

All writers agree that in the pulmonary lesions under discussion physical signs are most misleading. Extensive processes may give very few signs, especially in bronchiectasis. This is very well shown in two patients whom I have under observation. In the one patient the Roentgen ray and bronchoscope show a very large process in the left base and a smaller one in the right base. The only physical signs are dulness and a few scattered râles over the involved areas. The other patient has coughed up about 4 ounces of offensive three-layered sputum every day for two years. The physical examination shows only a dulled right base posteriorly with distant bronchovesicular breathing and now and then a few bubbling râles. In both of these cases the thickened pleura hides the real physical signs. The physical examinations would never reveal the true condition; but the diagnosis could be made from the sputum and the clubbed fingers, both of which are valuable symptoms which are too often overlooked.

The collection and examination of the twenty-four-hour sputum yield such important evidence that it is surprising that this is so often neglected. The quantity and fetor of the three-layered sputum are valuable indices of the character and progress of the process. Microscopically the presence of Dittrich plugs differentiate putrid bronchitis from a chronic bronchitis which has temporarily caused fetid sputum, since they are absent in the latter. They are also always present in pulmonary abscess and gangrene. Elastic fibers are of less importance, since they may be found in any destructive lesion in the lung. In lung abscess and gangrene they may be absent, since they may have been digested by the trypsin ferment which, as shown by Filehne, is secreted by the bacteria.

It should also be noted that bloody sputum and even large hemoptyses may occur in non-tuberculous suppurative lesions.

Clubbing of the fingers should always be looked for in these patients. It is surprising to note how early this may appear. Hence their occurrence in any patient who has no cardiac lesion is very significant when there is putrid sputum, even when the pulmonary physical signs are vague.

The fluoroscope and roentgenogram must be used in every case. Fortunately we now have roentgenographers of great skill in fluoroscopy, and in the making and reading of plates. It is true that many mistakes in diagnosis have been made, and errors will be committed in the future. It would be asking too much of any method to demand that it be infallible. One must not be surprised that the exact character and site of the lesion is not always determined, for, after all, we are only dealing with shadows and their interpretations. In the lung these shadows may not alone be caused by the actual lesion, but also by the associative bronchopneumonic areas around the cavities, or by patches of infiltration which are associated with the lesion but are not of the same type. The most frequent field of error lies in the differentiation of putrid abscesses of the lower lobe from simple bronchiectasis and small bronchiectases with peribronchitic infiltration, especially if there is much thickening of the pleura.

The Roentgen rays are of the greatest value in revealing unsuspected foreign bodies, localized empyema, localized pneumothorax and visceral displacement. Tuffier, whose experience in pulmonary surgery is second to none, relies absolutely on Roentgen-ray findings, and when they do not agree with the results of the physical examination he disregards the latter entirely.

Next in importance to the Roentgen ray comes bronchoscopy, and I am sure that when the two are combined the chance of error will be very much reduced. Indeed, I believe that no case should be submitted to a radical operation unless a bronchoscopy has been performed. In Mount Sinai Hospital we have been very fortunate in having the cooperation of such a skilled bronchoscopist as Dr. Yankauer, whose work in diagnosis and treatment has yielded such splendid results. A few instances deserve mention. Thus in an old man in whom the diagnosis of bronchiectasis had been made, he found a carcinoma of the bronchus in an early stage. In another case under Dr. Lilienthal's care there was complete agreement in the clinical diagnosis of bronchiectatic cavities in the right lower lobe. This was also the verdict of the roentgenographer, yet the bronchoscope failed to reveal any bronchial dilatation. The final diagnosis was that of parenchymatous lung abscess communicating with the bronchus. In another patient, a child also under the care of Dr. Lilienthal, the roentgenogram showed only a diffuse shadow of the entire right lung. With the bronchoscope, Yankauer was able to recognize a large simple bronchiectatic cavity with pus oozing from all the main bronchi in the right lung. Recently in a patient with hemoptysis, under the care of Dr. Alfred Meyer, he was able to show that the bleeding came from a varix in the right bronchus.

Yankauer claims that he is now able to differentiate bronchiectasis from multiple abscesses. In bronchiectasis, besides finding a change in the lumen of the bronchus, he has observed that the area can be sucked dry and will remain so. In purulent infiltration, however, there is no change in the lumen of the bronchus, and the area cannot be kept dry because there is a constant oozing of pus.

Besides these improvements in the methods of diagnosis it is essential that physicians should broaden their views on the pathology of pulmonary suppuration. Increasing experience at operations and necropsies shows that it is essential that the lung be consid-

ered as a whole, and that it is erroneous to regard the parenchyma, bronchi and pleura as separate parts. They are all closely related in the etiology and progressive development of the lesions. This relation is still frequently overlooked. As an example I will quote the opening sentence of a comprehensive paper on bronchiectasis by Dr. Willy Meyer:[1] "Bronchiectasis is a disease of the bronchial tree, *not* of the pulmonary parenchyma." I venture to say that this is true only at the outset of the disease, and then only in a small proportion of the cases. Nearly always there is more or less involvement of the parenchyma or of the pleura, and often of both. This relation is well shown in Lord's[2] definition that "bronchiectasis is only in rare instances an independent affection, but usually arises as a complication of different diseases of the bronchi, lungs and pleura, singly or combined." An excellent discussion of these varied relations of the etiology and pathogenesis of bronchiectasis has recently been published by Howard.[3]

Fraenkel[4] divides bronchiectases into two groups; the bronchitic and the indurated; he emphasizes the difficulty of differential diagnosis from chronic abscess and tuberculosis. Garrè and Quincke[5] group putrid chronic abscesses and bronchiectasis under the same heading, and make no attempt to differentiate them in their discussion.

Many bronchiectases are the result of localized empyemas. Alexander James[6] states that "50 per cent. of the latter discharge into the lung, and produce fistulous tracts. If the drainage is interfered with, there is a formation of new connective tissue which contracts and causes stenosis or displacement of the bronchi. Small bronchiectases are thus caused. Then as the result of coughing, pressure of secretion and traction, these cavities will enlarge." Körte[7] also directs attention to the not infrequent softening of the pulmonary parenchyma when there is much putrid decomposition in bronchiectatic cavities. This will produce lesions which cannot be differentiated from pulmonary gangrene. This distinction, however, is not important since the operative indication is the same.

We must therefore pay more attention to the small pleural lesions, that is, localized empyemas, a by no means easy task, because the signs and symptoms of these processes are often very vague, and hence may escape detection unless they are carefully searched for with the Roentgen ray.

Closely allied to the small localized empyemas are the interlobar empyemas which are beginning to assume more importance, and hence deserve a brief consideration. The quantity of pus in such exudates is variable, and may reach a liter or even more. They usually occur with or after pneumonia, but they may also arise independently. If small they may escape diagnosis, and if they drain into the bronchus, as they usually do, they may be considered small pulmonary abscesses. This error may readily be made because in the foul-smelling pus which is expectorated elastic fibers have not frequently been found. As Stone[8] maintains, this differentiation is academic because these interlobar exudates are the result of small intrapulmonary necrotic foci near the fissure which have ruptured into it, after having caused its edges to become agglutinated. In other cases the empyemas drain into the bronchus. If this remains free, this is usually the end of them; but if the drainage is blocked, then the lesion progresses to an abscess of the lung of a greater or less extent, which must be treated surgically.

At other times the exudates remain encapsulated, and, if the quantity of pus is large, the diagnosis by physical signs and exploratory needle may be made, especially if there is localized tenderness along the fissure.

The physical signs of an encapsulated interlobar exudate of considerable size are: A zone of dulness, more or less high pitched and tympanitic in character, with the presence of bronchovesicular breathing over the dull area, often accompanied with friction sounds if the condition is acute. Below the dull zone the resonance and respiratory sounds are more nearly normal. On the left side the tympanitic area of the stomach (Traube's space) is retained and on full inspiration the more normal area below the zone of dulness increases in size. Grocco's paravertebral triangle is not present as is usual in large, free exudates. If the exudate is on the right side, the heart is apt to be extremely displaced to the left (Fraenkel); if on the left, the displacement is not so marked as with free fluid (Stone). The roentgenogram will show a shadow extending from the apex of the heart toward the head of the humerus, or from the sternal junction of the fourth rib on the right outward to the head of the humerus. The fluoroscope will show the same shadow band and also the moving shadow of the diaphragm.[8]

The Roentgen ray is invaluable in the diagnosis of these exudates, although even here errors may occur, as happened in one of my patients in whom a bronchiectatic process gave the "hanging shadow" which is so characteristic of the interlobar exudates.

Pulmonary suppuration must always be considered in its relation to other organs. Of these the most important are the liver, subphrenic space, uterus and tonsils.

The relation to the liver and subphrenic space is too well known to require more than mention. Of less frequent occurrence is the gangrenous abscess of the lung after operations on the gallbladder. I saw such a case in a patient who had been operated on by Dr. Berg. About ten days after a cholecystostomy the patient suddenly became ill without any discoverable cause, except a few râles at the right base posteriorly. Dulness rapidly developed, and the case looked like a secondary pneumonia, until the patient suddenly began to cough up large quantities of very foul pus. A putrid abscess of the lung having been diagnosticated, an operation was advised, even though the patient's condition was most desperate. Under local anesthesia Dr. Berg resected two ribs and drained the abscess. After a protracted convalescence the patient finally recovered.

Appendiceal abscesses which burrow along the psoas muscle into the subphrenic space and thus reach the lung must not be forgotten. A most unusual case of lung abscess which occurred in my practice many years ago also deserves mention. A man who had a chronic staphylococcus osteomyelitis of the ilium suddenly coughed up a large quantity of pus, and for a long time suffered from an abscess of the lung, from which he finally recovered when the osteomyelitis of the ilium had been cured.

1. Meyer, Willy: Ann. Surg., July, 1914.
2. Lord: Diseases of the Lungs, Bronchi and Pleura, Philadelphia, Lea and Febiger, 1915, p. 108.
3. Howard: Am. Jour. Med. Sc., March, 1914, p. 313.
4. Fraenkel: Special Pathologie und Therapie des Lungenkrankheiten, p. 178.
5. Garrè and Quincke: Surgery of the Lung, Ed. 2, p. 114.
6. James, Alexander: Pleurisy, p. 124.
7. Fränkel and Körte: Der gegenwärtige Stand der Lungenchirurgie, Berl. klin. Wchnschr., 1912, Nos. 6 to 8.
8. Stone: Interlobar Exudates, Boston Med. and Surg. Jour., July 27, 1911.

Tonsillectomy is occasionally the cause of lung abscesses. This was the cause in a fatal case of mine in a woman, aged 26. Two days after a tonsillectomy she was taken sick with a fever and cough; dulness and râles were present in the left axilla. When she was admitted to my service ten days later she had dulness, bronchial breathing and crepitant râles in the left subclavicular region and axilla. In the left base the breathing was diminished. Two days later the signs of abscess of the left upper lobe were unequivocal; but before anything could be done there was a sudden rupture into the pleural cavity which caused her death in a few hours.

In three of a series of sixteen cases of abscess of the lung reported by Scudder,[9] tonsillectomy was the cause. This proportion does not seem too high to me, for it has always been a surprise that these abscesses from the aspiration of blood or food after tonsil and adenoid operations do not occur more frequently with the technic of the majority of operators.

The distressing cases of embolic multiple abscesses of the lung which occur in severe puerperal sepsis also deserve mention. They are a class of cases which are among the most melancholy in medicine, and once seen are not apt to be forgotten. I have never seen a case of this kind recover.

In all cases of pulmonary suppuration in which the etiology is at all obscure the possibility of syphilis must always be borne in mind. It is true that these broken down gummas are rare, yet the fact that they do occur must not be forgotten because of the excellent results which are obtained from salvarsan. A case of this kind recently occurred in the service of Dr. Alfred Meyer; for some time it was regarded as a lung abscess until a positive Wassermann reaction revealed its real nature. Prompt cure followed the use of salvarsan. Howard[10] shows that even in bronchiectasis the relations of syphilis are by no means to be neglected.

Finally the association of pulmonary suppuration and tuberculosis must be mentioned. I refer to the cases in which lung abscesses develop in tuberculous subjects which are independent of the tuberculous process. A mere mention must suffice, since it is too complicated a subject to be discussed at this time.

The consideration of these pathologic relations must convince one of their practical value in diagnosis and treatment, and, therefore, in determining the need of surgical interference, a carefully taken history is all important. Especial attention should be paid to antecedent diseases such as pneumonia, empyema, influenza, whooping cough, abdominal operations, the puerperal state, tonsillectomy, syphilis, foreign bodies, and especially tuberculosis.

Influenza deserves especial attention because it is so frequently associated with pulmonary suppuration. Where it is concerned one should delay surgical operation longer than one would otherwise, as these patients as a rule make excellent recoveries even when their symptoms seem urgent. I make this statement as the result of a considerable experience with patients of this kind. In these cases the upper lobes are usually infiltrated. There is often dulness in the anterior mediastinum and even hoarseness, from pressure of the enlarged glands in the mediastinum. I have found the fluidextracts of buchu and hydrastis in large doses kept up for a long time, and fresh-air treatment, to be of great value.

I would also urge that operations should never be considered unless foreign bodies have been eliminated by the Roentgen ray or the bronchoscope, even if there is no mention of this possibility in the history. This is especially true in children, and even in adults the swallowing of a foreign body may possibly have been overlooked, as occurred in the case of the old man already referred to in the discussion of bronchoscopy. Howard[11] reports a very interesting case in which the shadow of a tack in the skiagram was overlooked; but it was clearly recognized after the boy coughed up the tack one year after his discharge from the hospital. It was not until the tack was coughed up that the mother remembered that the boy had swallowed it. Hoffman and Chevalier Jackson[12] both urge the importance of considering each case of bronchiectasis as one of possible foreign body origin.

Acute pulmonary abscesses usually develop after pneumonia or they are the result of embolisms or of foreign bodies. When due to pneumonia it is wise to wait, since there is a distinct tendency toward spontaneous cure.

In true metapneumonic abscesses which are usually due to a pneumonic necrosis of the infiltrated tissues, there is sometimes very extensive sequestration. If this can be expectorated, spontaneous cure will follow; but if the putrid expectoration continues and the fever persists, then the only cure is by surgical interference (Körte[5]).

When the acute pulmonary abscesses are caused by embolism they usually go on to gangrene and must be treated surgically. Much will depend on the primary cause, and whether they are multiple. The prognosis is usually very bad. In the acute pulmonary abscesses which are caused by foreign bodies, bronchoscopy is often of signal value. When the aspirated foreign body is food, the outcome will depend on whether the food is soft or hard. It may not be possible to remove all of it with the bronchoscope. If the food is soft and the patient is young, it may be advisable to wait, as the abscess may remain localized; or it may be cured by coughing up food remnants and the abscess contents. Such a successful experience I recently had in a girl of 10, who aspirated some fish while she was laughing heartily at her meal. On the other hand, Lilenthal has recently reported a case of a child of 2¾ years who aspirated some pieces of nut. Although pieces of the chewed nut were removed with the bronchoscope by Yankauer, a chronic bronchiectatic abscess resulted which required operation.

In acute pulmonary gangrene spontaneous cures sometimes result, but this is so exceptional, the tendency of the disease to progress rapidly is so pronounced, and the constitutional evidences of disease, with the danger of hemorrhages and metabolic abscesses (especially in the brain), may be so severe that it is not wise to wait too long. There is also the great danger of aspiration into other parts of the lung. The only contra-indication to operation is that the other lung should not be affected, and the patient's condition must not be too bad. Diabetes is another contra-indication.

In these patients the Roentgen ray is of the greatest value in the diagnosis of the site of the lesion and in

9. Scudder: Boston Med. and Surg. Jour., Oct. 1, 1914.
10. Howard: Am. Jour. Med. Sc., March, 1914, p. 315.
11. Howard: Am. Jour. Med. Sc., March, 1914, p. 319.
12. Quoted by Howard (Footnote 11).

indicating its extent. Even if the exact localization is impossible the surgeon is warranted in making extensive exploration when the chest has been opened, since the prognosis is so bad when the case is left to nature. Repeated operation may even be necessary because lesions which were small at first may subsequently develop to a larger extent. This is no disadvantage because the patient's chances will have been so improved by drainage of the primary large foci, that he is in a position to stand these later operations.

In putrid bronchitis when medical treatment has failed Fraenkel and others have recommended artificial pneumothorax and claim to have seen good results from it. This is possible because there is no infiltration of the lung, and there are no pleural adhesions, and hence the lung may collapse. This puts the lung at rest, lessens the secretion, and diminishes the danger of aspiration into the healthy lung tissues. Furthermore, there is a better chance for energetic coughing to empty the contents of the bronchi because the air cushion between the lung and the rigid chest wall will allow this more readily than would otherwise be possible. In passing it may be noted that in putrid bronchitis we find the only condition of pulmonary suppuration in which artificial pneumothorax has been found at all useful. In all other suppurative pulmonary conditions it has failed.

In bronchiectases and chronic putrid abscesses surgical interference must not be considered too early; first, because the operative results are the poorest of all in pulmonary surgery, the mortality being as high as 30 per cent., and the chances of numerous operations great. Secondly, because the diagnosis of the site and extent of the process is still difficult, and errors are especially frequent. Tuffier goes so far as to state that errors as to the extent of the process are the rule. As already stated, the roentgenograms are often very unsatisfactory, small cavities being difficult to differentiate from the lumen of the bronchi. The physical signs are very ill defined unless the infiltration of the pulmonary parenchyma is extensive. Körte correctly maintains that unfortunately it is by no means an infrequent occurrence to discover at the post mortem that the entire lung is riddled with a series of rigid-walled abscesses, from which the putrid expectoration has been derived. It is to be hoped that these difficulties will be greatly minimized by the combined use of the bronchoscope and the Roentgen ray.

It is therefore wise to see what results can be obtained from medical treatment with the balsams, fluid restriction, dry climate (Arizona and New Mexico being especially indicated), and topical applications through sprays, injections and the bronchoscope. The latter promises to be especially valuable.

The subacute spindle dilatations after whooping cough, bronchopneumonia and influenza usually yield good results to medical treatment. Unfortunately many physicians do not pay sufficient attention to the complete recovery of these patients. If numerous large moist râles persist over the involved areas or at the base of the lungs, a change to a dry climate should be insisted on. Otherwise foci will be left behind from which bronchiectases may easily develop.

It is true that we have all of us had patients in whom this line of treatment has yielded good results; yet these are the exceptions and not the rule; and hence we should not wait too long in considering surgery, because the operative prognosis depends so much on the duration of the disease. We should turn the case over to the surgeon when medical treatment fails to change the character of the putrid purulent secretion, and also fails to reduce its quantity. We should not wait until the violent paroxysms of coughing have widely disseminated the disease by aspiration into the healthy areas, and have even infected the sound lung. Another danger must not be lost sight of, namely, that of the development of carcinoma in the diseased area. I have recently seen two examples of this.

The best surgical results are obtained when these patients have one or several large cavities. According to Körte especially good results occur in bronchiectases of the lower lobe which follow empyema.

The surgical indications are extensive resections of the thoracic wall, pneumotomy and pneumectomy. The latter operation, although it is the most radical, is the one which promises the best results, and the successful cases of Lenhartz, Körte, Krauss, Kuemmel, Sauerbruch, Lilienthal and others, in which parts of or whole lobes have been successfully resected, are very encouraging. A patient of mine, a young man 18 years of age, with an extensive process in the right middle lobe of eight years' duration, was recently operated on by Lilienthal, the greater part of the right middle lobe being resected. The results thus far indicate that the patient will be radically cured. I would also refer to the successful case recently reported by Lilienthal,[13] in which a splendid result was obtained by the removal of the right lower lobe in a boy 2¾ years old, for suppurative bronchiectases which were the result of the aspiration of partly masticated nuts.

The danger of bronchial fistulas after these radical operations must not be forgotten, and also the possibility of several operations must not be lost sight of.

Artificial pneumothorax usually fails in these cases on account of the extensive adhesions. This is not surprising because bronchiectases are so often the result of localized empyemas, as has already been referred to. All surgeons unite in condemning its use in these cases. Ligation of the pulmonary artery has been recommended by Sauerbruch and Willy Meyer; but it is to be noted that this only causes a shrinking of the lung and does not always result in a cure.

Granting that the mortality is high and the possibility of multiple operations is great, we should give these patients a chance, since surprisingly good results have already been reported in a number of long-standing cases. These patients lead such a miserable existence that they are willing to take their chances. The outlook will be very much better as the surgeons improve their technic with increased experience; but it will be still better if these cases are referred earlier to him, before the process has extended too far. It is in just this class of patients that the internist must consider the possibilities of surgery, both because they are the most common cases of non-tuberculous pulmonary suppuration, and because it is in this field that the surgeon must have the opportunity to develop the possibilities of his skill.

In conclusion I would say that what has already been done by the surgeon is a splendid promise for the future. Surgery never goes backward. It sometimes goes too far, but then the natural correction always controls the swing of the pendulum. Of this there is at present no danger. The surgeon's attitude is admirably stated by Robinson:[14]

13. Lilienthal: Ann. Surg., June, 1914.
14. Robinson: Progressive Med., xvii, p. 109.

Is it not true that many operations successful today would have remained in their undeveloped infancy had not the faith of certain internists been greater than the surgical results justified at the time? Those of us who are struggling with the surgery of chronic lung infections wish only to convince physicians that we are conservative; that we are not inclined to attack unsuitable cases; that we are working along lines of surgical propriety; that already we can relieve; and that eventually, with added experiences, we may cure some of these cases which seem to defy medication.

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THE APPLICATION OF THE VAN SLYKE AMINONITROGEN DETERMINATION TO THE DIAGNOSIS OF CANCER*

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In working with the Abderhalden reaction in pregnancy or cancer we are dealing with a reaction which lends itself admirably to diagnostic work. With this reaction, as with all other laboratory tests, we are dealing with something which does not and cannot give absolutely accurate results (clinically). But experience has shown that the results obtained are accurate in a sufficiently large percentage of the cases to give it a place in the diagnostic armamentarium of the clinician.

It is not my intention in this short paper to give a description of the technic of the thimble method, nor to go into details of the theory on which this test is based. The thimble method, which is the method advocated by Abderhalden, and which is being used all over the world, contains a number of errors which appear at the most unexpected times and which invalidate the test to such a degree that the test either cannot be read, and must be repeated, or else the reading assumes the guise of guessing. I will briefly enumerate some of these errors.

1. The most constant error is in the serum of the patient. The blood of the patient at all times contains amino-acids. Shortly after meals, during the height of digestion, the amino-acid content of the blood may be decidedly increased.[1] Or, again, in certain cases of malnutrition there is an abnormal increase of ninhydrin-reacting substances which diffuse readily through animal membrane. It will be seen, then, if serum from a patient containing a high amino-acid content be used, the dialysate of the test serum, as well as the controls, will give a color reaction with ninhydrin.

2. If in taking the blood from the patient, the blood is permitted to drip into a container, or if during centrifugalization some of the red blood cells should be broken up so as to free the hemoglobin, the same error will occur as above.

3. No matter how careful we may be in having all of our glassware absolutely clean and sterile, accidental contamination may occur.

4. Owing to the fact that it is impossible absolutely to sterilize the thimbles without boiling, another error may sometimes occur.

5. The thimbles, through careless handling, may become bruised or weakened at some point so as to allow protein to penetrate into the dialysate or else, if we boil our thimbles, the meshes become tightened so that they do not permit even peptones to pass.

6. In boiling the dialysate with the ninhydrin over the gas flame for one minute, as advocated by Abderhalden, a different degree of intensity of heat must undoubtedly be obtained by the most careful worker. I have tried, and I believe successfully, to overcome this error by boiling all the test tubes in a water bath at the same time for ten minutes.

From the foregoing it will readily be seen how extremely difficult and how extremely painstaking we must be in order to obtain accurate results. At the suggestion of Prof. V. C. Myers of the Post-Graduate Hospital Medical School, I have been using the Van Slyke aminonitrogen apparatus, which Dr. Van Slyke of the Rockefeller Institute of New York devised for the purpose of measuring the aminonitrogen content of the blood.

The rationale of this method is that we are able to determine accurately the amount of aminonitrogen liberated or given off in a given quantity of serum.[2] We add dried cancer substrate (prepared in the same manner as for the thimble method and then dried) to the suspected serum in a test tube and take another test tube which contains suspected serum alone, cover the serum with a layer of toluene and incubate for twenty-four hours. If the suspected serum is the serum of a cancer patient and contains a sufficient quantity of the proteolytic enzyme, a reaction will take place. After measuring the amount of aminonitrogen liberated from the serum alone, and then measuring the amount of aminonitrogen liberated from the serum plus substrate, we find that the amount of the latter is increased over the former by anywhere from 0.05 to 0.15 c.c.

In three cases of cancer with cachexia I observed that the amount of nitrogen liberated in the serum plus substrate was decreased anywhere from 0.4 to 0.1 under the amount of nitrogen liberated from the serum. Inasmuch as I did not at that time use the dried cancer substrate, Dr. Van Slyke suggested that the amount of fluid in the moist substrate may have diluted the serum to a great extent so as to account for that decrease. In preparing the substrate for this test we must be careful to rid the substrate of all soluble proteins, and before using the same it must be tested to determine whether any nitrogen is given off by the substrate. Should this be the case, the substrate must be discarded. The total number of cases examined by the Van Slyke method was eighty-two. Of these forty-two were clinically and pathologically diagnosed as cases of carcinoma, which were divided as shown in the accompanying tabulation:

CASES DIAGNOSED AS CARCINOMA

No. of Cases		Pos.	Neg.
14	Cancer of stomach	10	4
4	Cancer of esophagus	4	0
3	Cancer of colon	3	0
2	Cancer of pylorus	2	0
11	Cancer of breast	9	2
8	Cancer of uterus	7	1
42		35	7

Positive, 83.3 per cent.; negative, 16.7 per cent.

* From the Laboratory of Pathological Chemistry and the Department of Medicine, New York Post-Graduate Medical School and Hospital.

1. Van Slyke and Meyer: Jour. Biol. Chem., 1912, xii, 399.

2. Van Slyke and Vinograd: Proc. Soc. Exper. Biol. and Med., May 20, 1914.

NONMALIGNANT CASES EXAMINED

No. of Cases		Pos.	Neg.
2	Arthritis	0	2
1	Hodgkin's disease	0	1
5	Gastric ulcer	0	5
1	Ulcer of lesser curvature	0	1
2	Abdominal adhesions	2	0
5	Duodenal ulcer	0	5
2	Cholelithiasis	1	1
1	Gout	0	1
1	Pericolitis	1	0
4	Cirrhosis of liver	0	4
5	Colitis	0	5
3	Arteriosclerosis	0	3
2	Interstitial nephritis	1	1
1	Obstructive jaundice	0	1
3	Syphilis	0	3
1	Tuberculosis	0	1
1	Ileac stasis	1	0
40		6	34

Positive, 15 per cent.; negative, 85 per cent.

In all the cases tabulated the substrate used was obtained from carcinoma of the breast. All the cases, with a few exceptions, were tested in the laboratory of pathologic chemistry of the Post-Graduate Hospital, New York.

CONCLUSIONS

While the number of cases examined is small, nevertheless, I believe that if Abderhalden's theory should prove to be the correct one, the Van Slyke amino-nitrogen apparatus will give us more satisfactory results than the thimble method, for the following reasons:

1. The Van Slyke method is very accurate if performed properly.

2. The blood of the patient may be taken at any time, even shortly after meals. The addition of hemoglobin does not invalidate the test.

The percentage obtained in my series of cases should not be considered absolute, for we are unable to figure an absolute percentage on such a small number of cases. It would be preferable to have examined at least 500 cases before any definite percentage of results was announced.

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THE NECROPSY AS A PUBLIC SERVICE

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The very careful investigation of the subject of post-mortem examinations in the United States made two years ago by a committee of the New York Academy of Medicine[1] showed that of the seventeen large hospitals in the United States from which statistics were available for the years 1910, 1911 and 1912, the ratio of necropsies to deaths ranged from 7.3 to 62.7 per cent. In only four was the percentage above 25. As a reason for these very low percentages as compared with those of European hospitals, the committee states that "the main causes of the difficulties in obtaining permission for necropsies are due (*a*) to the ignorance on the part of the public of the importance of necropsies to science and therefore to the welfare of the people; (*b*) to the existing inadequate laws; (*c*) to the activity of undertakers and certain funeral societies; (*d*) to the inadequate rules of hospitals in this respect; and (*e*) to the claims of the department of anatomy."

While the foregoing are no doubt important deterring factors, I believe that much more important are (*a*) the lack of genuine interest in post-mortem examinations on the part of many physicians and surgeons, and (*b*) the lack of a commendably selfish interest in post mortems on the part of intelligent relatives of the dead.

Some physicians entirely lack an interest in necropsies because they are not interested in accurate vital statistics and in problems of heredity in disease, or because they do not appreciate the value of the necropsy in the correction of errors in diagnosis. Possibly some also hesitate to bring their diagnoses or operative procedures to the test of publicity in the necropsy.

Most intelligent laymen will respond to the argument that they ought to know the weaknesses of the members of their own families, but this argument is frequently omitted or greatly subordinated by the physician proposing that a necropsy be made. Usually necropsies are asked for as a favor to the physician, and rarely offered as a favor to the relatives.

The policy of the desirability of checking diagnoses and the results of operative procedures by the necropsy findings and of presenting to the relatives the desirability of their knowing the exact cause of death and the presence of intercurrent diseases has been followed out in the Mayo Clinic for many years. As a result, during the triennial period, 1910-1912, in 626 deaths, 512 necropsies were made, or 81.8 per cent.; in 1913 there were 269 deaths and 227 necropsies, or 84.4 per cent.; in 1914, 293 deaths and 258 necropsies, or 88 per cent., while to date (March 17) in 1915, there have been 73 deaths with 73 necropsies, or 100 per cent.

Of the hospitals surveyed by the committee of the New York Academy of Medicine, which have patients of about the same social conditions as those in the Mayo Clinic, the two in America showing the highest percentage of necropsies to deaths are the Johns Hopkins Hospital of Baltimore and the Royal Victoria Hospital of Montreal. During 1910, 1911 and 1912, the former had 346 post mortems, or 62.7 per cent. of its deaths, and the latter had 560 post mortems or 67.6 per cent. of its deaths.

NEED FOR NECROPSIES

At present our most accurate vital statistics concerning the cause of death from functional and chronic diseases are derived from the records of patients in charity hospitals. The charity patient, who for years has been examined and treated by physicians working in a public capacity before students, or at least using their knowledge for the teaching of students, as a rule receives thorough scientific diagnosis and treatment; and, supplementing this, the charity patient on whose body, in case of death, a necropsy is performed, is the subject of a death certificate which closely approximates the facts. But we must recognize that inferences drawn from statistics compiled from the records of great charity hospitals are apt to be more or less misleading when applied to specific cases in the estimation of family inheritance or life expectancy in the well to do. If Mendel's laws are of any value, forecasts of probable heredity can

1. Report of Public Health, Hospital and Budget Committee, New York Acad. of Med., The Journal A. M. A., June 7, 1913, p. 1784.

be accurately made only on a basis of accurately observed individual familial incidence.

In all those fields of investigation in which a knowledge of the exact cause of death is important, the necropsy stands in first place. Aside from the infectious diseases and accidents, most of the fatal diseases of mankind can be diagnosed with accuracy only after death by an examination of the body both grossly and microscopically. This is particularly true of the three diseases chiefly resulting in the death of adults; namely, tuberculosis, cancer and diseases presenting the cardiovascular renal syndrome.

In the consideration of facts in the family history, diagnosticians and life insurance examiners will agree that often the cause of death as stated by the patient is absolutely untrustworthy, not because of wilful deception on his part, but because neither he nor his physician nor anyone else really knows of what his ancestors died; and yet this is information which every intelligent man should have at hand. Every stock breeder tries to know not only the cause of death, but also the intercurrent diseases of every one of his pure bred animals that dies. In the same way nearly every intelligent man can be made to understand that he ought to know and has a right to know all the facts concerning the diseases of all the members of his family.

In the presentation of this argument to the intelligent layman, the obvious corollary is a frank admission on the part of the physician that he does not and cannot know everything about the diseases of every person, either by a clinical or a surgical examination. If quite honest, he must go further than this and acknowledge also that even after a post-mortem examination he cannot approach absolute accuracy until microscopic examination of the tissues has been made. He may say, however, in presenting the matter to the relatives, that his present knowledge from the clinical and perhaps surgical examinations goes about so far, that if he makes a careful post-mortem examination he will probably be able to extend that knowledge considerably by the study of the gross specimens, and that if in addition he makes a microscopic examination he many extend it yet further, though he must honestly acknowledge that there are cases in which, even after every possible examination has been made, the truth may yet lie beyond his ken. It is also necessary to present frankly the fact that it is not alone the general cause of death which he seeks to determine, but also—what is sometimes of much greater interest to himself and the relatives—the incidental occurrence of abnormalities or other diseases. In making such acknowledgment of our shortcomings in the matter of clinical diagnosis, it may not be amiss to refer to the experience of many good clinics in regard to inaccuracies of clinical diagnoses as revealed at necropsy. Without going into this matter in detail, a general survey of the statistics furnished from a number of large hospitals where patients had been under examination for a long time before death, seems to show that clinical diagnoses in carcinoma are correct in only about three-fourths of the cases, in tuberculosis in less than half of the cases, and in cardiovascular-renal diseases in less than 40 per cent. of the cases which come to necropsy. While it is not possible to raise the percentage of accuracy even by post-mortem diagnoses to 100, yet such great improvement is possible by the necropsy method that its advantages are incontestable.

CONSENT FOR NECROPSY

The average layman may know that "modern progress of medical science and the proper development of medicine in the future are closely correlated with the use of the cadaver for post-mortem examination," but he is not therefore sufficiently interested to permit a post mortem on the body of his relative. The matter must appeal to him personally. Some men may be made to feel that they are under obligation to give the attending physician a chance to review his ante-mortem observation. Some may be reached by the appeal that a post-mortem study of the cases in which they are interested may immediately help in the diagnosis or treatment of other similar cases; but the one argument which appeals most to intelligent men is that they ought to know exactly, not only the cause of death, but also the incidental diseases of every member of their families. If we can get this point of view to be taken by the relative, his ignorance of the importance of the necropsy to science, the existence of inadequate laws and hospital rules, the objections of undertakers and burial societies and the just cause of anatomists will all become as nothing and he will not only permit but will insist on a necropsy, and moreover, he will often demand a written report of the findings. It is to this commendable, intelligent self-interest that we should appeal in our arguments for necropsies. The most unyielding objections are based on mistaken religious scruples, yet even against these progress is possible and some of the clergy of the most conservative churches are now advising necropsies.

In relation to the details of presenting the subject of necropsy to the relatives of the deceased, there are many important points which are sometimes overlooked. One of the long-established customs we long ago found it necessary to correct was that of having anyone who chose to do so present the matter. We recognized that this must be done by one person only. It took more than a year in our clinic to change the customs of the institution so that the pathologist invariably should be called immediately on the death of a patient, and that he and he only should make any suggestions to the friends concerning the post mortem. It frequently happened in the early days that the good intention of sisters, nurses, surgeons or clinicians in broaching the subject resulted in a very positive refusal. Formerly it was difficult to get the undertaker to wait until the necropsy was made before beginning his operations. This was overcome by conducting the necropsy as soon as consent had been obtained, at any hour of the day or night. Most important is the establishment of a reputation for honesty and frankness in reports to the relatives. At the first interview, the place and time for a formal report, after the necropsy and preliminary microscopic examination have been made, should be arranged for.

For a time consent was obtained only by the chief pathologist; then in later years by the first assistant in pathology. More recently, the work has been turned over to the Senior Fellow in Pathology. This man must have been a graduate of a good medical school and have had one year in a general hospital before coming on service as a Fellow. He serves six months as junior, during which time he listens to his senior's requests for necropsies, but makes none himself except in emergencies. He then serves six months as a senior, during which time he makes requests. Of course, there is considerable difference in the per-

sonality of different men coming on this service, chosen as they are from all sections of the country and from different medical schools. The fact, however, that the necropsy service has not fallen below 80 per cent. in the last four years, is sufficient evidence that it is not all a matter of personality, but more largely a matter of training in placing proper arguments before the relatives.

IN THE POST-MORTEM ROOM

As soon as possible after consent for a post mortem has been obtained, the necropsy is made. This gives us a better knowledge of the condition of the body than is possible if a long delay has occurred. It gives better material for microscopic examination. It gives the undertaker a chance to do his work properly. The Senior Fellow is the chief operator at the necropsy, the Junior Fellow is his first assistant, and another Fellow in Pathology acts as clerk.

THE DEATH CERTIFICATE

The cause of death as stated in the usual death certificate is frequently inaccurate and often misleading. This is true in some instances even in which necropsies have been made. Many diseases, particularly the chronic infectious granulomas, neoplasms and those involving the cardiovascular and renal organs, require microscopic evidence before a correct judgment can be formed of the essential cause of death; but the death certificate must be signed before such a microscopic examination can be made. There is no provision for the correction of the original certificate after this further knowledge has been obtained. It would seem that in order to complete public records for statistical purposes a preliminary report might be made which should be sufficient on which to issue a burial permit, but that the final record of the case should have added to it any data which were subsequently obtained by the pathologic examination of microscopic sections, chemical analyses, etc. Such records, if made by competent and careful observers, would greatly increase the value of our vital statistics.

GIVING INFORMATION TO RELATIVES

It is futile to expect laymen to be interested in or to give consent for necropsies on the bodies of their dead relatives unless they are told honestly, fully and in simple language just what the findings are. If all pathologists would pursue this policy, not shrouding their work with mystery, but explaining everything in a perfectly matter-of-fact, business like way, being careful to make themselves clearly understood and being willing to spend considerable time with the relatives in elucidating not only the actual findings, but also the possible meaning of these findings to the family of the deceased, the public would soon come to realize the desirability of having necropsies performed. Also, there would be implanted a widespread knowledge of means of safeguarding against certain forms of disease, for example, tuberculosis, syphilis and cancer. Lessons mordanted in by grief sink deeply. We can do vastly more to spread a knowledge of disease in heart-to-heart talks with sorrowing relatives than we can by talking to the public in masses in lecture rooms when they would rather be at a moving-picture show. True, intelligent laymen, by reason largely of the campaign of education conducted by the American Medical Association and various boards of health, have already wide enough knowledge of cancer and tuberculosis so that the indolent physician may not with impunity "watch" such patients into the grave. It is to be hoped that the time will come when, similarly, laymen will have such a clear idea of the value to them of post mortems that the timid physician who does not offer his services for performing a necropsy will lose his standing with his patrons.

THE CLINICO-PATHOLOGIC CONFERENCE

After the death certificate has been signed and the friends told as accurately as possible what was found at necropsy, there yet remains the utilization of the material for clinical purposes and for organized research. It is our custom once a week to hold a clinico-pathologic conference on the post mortems of the preceding week. Gathered about a large table bearing the specimens are seated the physicians who have seen the case and such others as choose to come. The physician who made the clinical examination gives a brief summary of the clinical history and physical findings. If Roentgen negatives were taken, they are shown by the roentgenologist; if specific, luetic, hematologic, gastric or other tests were made, the results are described by the men who made them; if the patient had been operated on, the surgeon or his first assistant describes the operation and the operative findings. The clinician who had charge of the case after operation tells of the progress of the disease, especially noting the symptoms immediately preceding death. The pathologist gives a general description of the findings and demonstrates the gross specimens, supplementing this, when necessary, by microscopic slides or photomicrographs, usually of frozen sections. Following this is an informal discussion of the question-and-answer type of the case in all its bearings. Whenever anything of marked pathologic interest has been found and the time permits, there is a discussion of the disease and the findings in its broad general bearings, illustrated by specimens from other similar cases and microscopic slides or photomicrographs. The conference forms one of the most adequate means of correlating the clinical, surgical and pathologic aspects of disease.

ORGANIZED RESEARCH ON NECROPSY MATERIAL

Much of the organized research on pathologic material in the past has consisted largely of compilations of statistics of facts, form and numbers in gross pathologic anatomy. When consent for necropsy is obtained immediately after the death of the patient and the necropsy conducted as soon as possible, much of the material is still of value for microscopic examination. This is especially true when it is supplemented by pathologic material removed at operation and fixed when it is absolutely fresh. We follow the principle of making general microscopic surveys of all specimens obtained within a few days after their removal and of recording this data on the necropsy record. As a rule, study further than this is reserved for specific effort directed toward a particular organ or disease of an organ, and in connection with the study of the same organ or disease in the specimens removed at operation. Thus it will be seen that our general method of study is, (1) an intensive study of the case for the completion of the record from the purely pathologic point of view; (2) the broad correlation of all the different aspects of the case in the clinico-pathologic conference; and (3) the intensive study of some aspect of the case in relation to other cases of a similar nature.

A COMPARISON OF THE SWIFT-ELLIS AND MODIFIED RAVAUT INTRASPINAL INJECTIONS FOR SYPHILIS OF THE NERVOUS SYSTEM

REPORT OF TWELVE CASES

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Since the introduction by Horsley[1] in 1910 of intraspinal irrigation with mercuric chlorid solution for syphilis of the nervous system, much has been done and written on this mode of treatment; but since Swift and Ellis[2] reported their technic and results with serosalvarsan injections for parasyphilis (now a misnomer) in 1912, there has been no progress as to simplification of technic. Clinical and serologic results have supported their claims as to the efficiency of the method and the freedom from danger in the hands of one who knows how. It is true that ill results have been obtained, but with the originators of the method it is the belief of men who have had any experience that the so-called later improvements and simplifications of technic have been responsible for them, and principally, I believe, the Ravaut[3] method of direct injections of neosalvarsan.

It is the purpose of this paper to offer additional records tending to support the original method, and if possible to direct a more favorable impression among men who have had any hesitancy about employing this seemingly hazardous form of medication.

My experience comprises fifty-three injections in twelve cases. The technic employed has been the original or slightly modified Swift-Ellis in thirty-nine injections, and the Ravaut in fourteen. At first I employed 30 c.c. of the 40 per cent. serum in normal salt solution; later undiluted serum in quantities up to 22 c.c. In the employment of this method, after the first few injections it was unusual to have a temperature rise of more than one degree. Pains in the legs, headache and nausea occurred at times, often necessitating morphin, but these symptoms invariably disappeared in twelve to twenty-four hours. The Ravaut method as modified by Wile and later by Hall[4] was employed fourteen times in six cases, four having received three injections each.

I have recently been injecting as high as 30 c.c. of undiluted serum at weekly intervals, with a more speedy response and no ill effects. The patient in each instance has been able to leave the hospital in twenty-four hours. This would seem to be an important pillar in the support of the Swift-Ellis technic.

REPORT OF CASES

CASE 1.—D. P. H., aged 49, with tabes of eight years' duration, came for aid because of lost bladder and rectal control and marked difficulty in walking; practically bedridden. He had received the usual forms of mercury, in addition to treatment at Hot Springs. In 1912 he had four injections of salvarsan with no improvement. He exhibited on examination Argyll Robertson pupil, absent knee jerks, Romberg and marked static ataxia.

Preliminary serologic examination, Aug. 2, 1914.

Blood Wassermann negative.

Spinal fluid: Wassermann strongly positive, Nonne positive, cell count 33 per cubic millimeter.

Treatment.—Aug. 3, 1914, first intraspinal injection 30 c.c. 40 per cent. serum.

Aug. 11, 1914, second intraspinal injection, 30 c.c. 40 per cent. serum.

August 21, third intraspinal injection, 15 c.c. undiluted serum.

August 28, fourth intraspinal injection, 18 c.c. undiluted serum.

September 6, fifth intraspinal injection, 21 c.c. undiluted serum.

September 14, sixth intraspinal injection, 22 c.c. undiluted serum.

September 27, seventh intraspinal injection, 20 c.c. undiluted serum.

Results.—The Wassermann and Nonne became negative after the fifth injection, and remained so at the time of the last puncture, Sept. 30, 1915. The cell count dropped to ten after the second injection, after the fourth to three, and at the end of the seventh stood at five.

Remarks.—After each injection the patient was placed flat on his back. Pains in the extremities developed within three hours, requiring morphin, but disappeared over night. After the third injection the patient noticed that he no longer wet the bed at night. Likewise his rectal control was complete. When employing a cane his gait was excellent, and the hypotonicity of his legs, so apparent before treatment, was scarcely discernible. The patient was seen again three weeks after the last injection and felt no change for the worse, although he had stopped treatment entirely.

CASE 2.—J. A. C., aged 53. Tabes twelve years, chancre contracted twenty years ago. The patient complained of complete loss of sight in the left eye, rapidly failing sight in right and great difficulty in walking even with a cane; in fact, he had resigned himself to wheel-chair locomotion for six months. No loss in bladder or rectal control, no crises. He had had lightning pains eleven years previously. Accepted treatment with the hope of improving sight.

Serology of specimens taken at time of first injection, Aug. 3, 1914.

Blood Wassermann negative.

Spinal fluid: Wassermann positive, Nonne positive and cell count 22 per cm.

Treatment.—Aug. 3, 1914, first intraspinal injection, 30 c.c. 40 per cent. serum.

August 11, second intraspinal injection, 30 c.c. 40 per cent. serum.

August 21, third intraspinal injection, 12 c.c. undiluted serum.

August 28, fourth intraspinal injection, 16 c.c. undiluted serum.

September 6, fifth intraspinal injection, 20 c.c. undiluted serum.

September 14, sixth intraspinal injection, 16 c.c. undiluted serum.

September 22, seventh intraspinal injection, 16 c.c. undiluted serum.

Results.—The cell count showed a steady decline and at the last examination, Sept. 30, 1914, was 2 per c.mm. The Wassermann became negative after the fourth injection and remained so. The globulin excess disappeared after the sixth injection.

Remarks.—After each injection, in view of the symptoms, the patient was kept in the Trendelenburg position for sixteen hours with the hope of concentration by gravity of the medication in the upper cord region. Pains in the legs were insignificant at all times. Neither did the temperature vary half a degree, even when in one instance the serum showed distinct hemoglobin coloring. Although there has been no improvement in his vision, he has nevertheless not retrogressed. His gait was excellent with the use of a cane. When last seen, January, 1915, he was able to conduct his cigar store with no difficulty.

1. Horsley, V.: Neurol. Centralbl., 1910, xxix, 1170.
2. Swift and Ellis: New York Med. Jour., 1912, xcvi, 53.
3. Wile, U. J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, THE JOURNAL A. M. A., July 11, 1914, p. 137.
4. Hall, G. W.: Illinois Med. Jour., October, 1914.

Case 3.—J. M. F., woman, aged 55; tabes six years. Husband also had tabes, and died of some urinary trouble. Complains of marked gastric crises, and had become addicted to morphin therefrom. Has hypotonic gait; Romberg is present; knee jerks are absent; no impairment of sphincter control. Previous treatment consisted of mercury by inunction on and off for three years, and one intramuscular salvarsan injection in January, 1913.

Serology Aug. 12, 1914.

Blood Wassermann positive.

Spinal fluid: Wassermann positive, Nonne positive and cell count 54 per c.mm.

Treatment.—Aug. 13, 1914, first intraspinal injection, 10 c.c. undiluted serum.

August 20, second intraspinal injection, 14 c.c. undiluted serum.

August 28, third intraspinal injection, 14 c.c. undiluted serum.

September 6, fourth intraspinal injection, 18 c.c. undiluted serum.

September 13, fifth intraspinal injection, 16 c.c. undiluted serum.

September 22, sixth intraspinal injection, 15 c.c. undiluted serum.

Results.—The cell count after the first injection dropped to 16 per c.mm., and after slight variations was 2 at the last examination, Oct. 3, 1914. The Wassermann became negative at the fourth injection and the Nonne after the sixth.

Remarks.—Pains in the legs were severe after each injection, requiring morphin. There was also some headache and little nausea after the last three injections. It will be noticed that the injections were given at practically weekly intervals, and to this I attribute the good results. Gastric crises disappeared, and strangely enough so did the craving for morphin. The gait was practically normal and the general condition excellent. With the last examination the patient passed from observation.

Case 4.—P. S., aged 48; tabes for seven years. Has difficulty in walking, loses his balance in stooping over, eyesight failing, difficulty in emptying bladder. Exhibits Argyll Robertson pupil, Romberg and Westphal phenomena. Had had no antisyphilitic treatment, since he had never suspected such an infection.

Preliminary serologic examination, July 25, 1914.

Blood Wassermann negative.

Spinal fluid: Wassermann positive, Nonne positive and cell count 26 per c.mm.

Treatment.—July 26, 1914, first injection intraspinally 30 c.c. 40 per cent. serum.

August 5, second injection intraspinally, 30 c.c. 40 per cent. serum.

August 26, third injection intraspinally, 15 c.c. undiluted serum.

September 18, fourth injection intraspinally, 20 c.c. undiluted serum.

Results.—The cell count showed little change until the third injection, when it fell to 12 per c.mm. At the last examination, Nov. 15, 1914, the cell count was 5, the Wassermann negative, although at the time of the fourth injection it was slightly positive. The globulin excess persisted.

Remarks.—Untoward phenomena after injections were moderate. Clinically, all bladder disturbance and gait impediment disappeared. Vision, according to the patient, was improved, although this is doubtful. It seemed that the Romberg was not so marked. The patient said he felt well enough to return to work.

Case 5.—Fred H., aged 60, had tabes nine years. Almost total absence of vision, paradoxical urine retention, pharyngeal crises; unable to walk; poor nutrition. Exhibited absent knee jerks, Argyll Robertson pupils, marked static ataxia. Had taken only "patent medicines" for his ailment. This case was undoubtedly of a marked degenerative type.

Preliminary serologic examination, Oct. 12, 1914.

Blood Wassermann negative.

Spinal fluid: Wassermann and Nonne positive and cell count 24 per c.mm.

Treatment.—Oct. 16, 1914, first intraspinal injection, 16 c.c. undiluted serum.

October 30, second intraspinal injection, 20 c.c. undiluted serum.

Results.—The cell count after the second injection was 20, the Wassermann and Nonne remained positive.

Remarks.—Pains in the legs were moderate; vomiting occurred after the first injection; pharyngeal crises disappeared. The patient looked and felt better constitutionally. He refused to continue treatment.

Case 6.—G. R., aged 45, had tabes two years. He complained of lightning pains in the legs, slight difficulty in walking and paresthesias; had had a probable Charcot knee three months prior to observation. Examination revealed an Argyll Robertson pupil, loss of knee jerks and Romberg. The patient wanted relief from his pains.

Serology, Nov. 3, 1914.

Blood Wassermann negative.

Spinal fluid: Wassermann and Nonne positive, cell count 66 per c.mm.

Treatment.—Injected intraspinally, 14 c.c. undiluted serum Nov. 5, 1914.

Remarks.—The patient suffered intense pain in the legs, requiring two doses of morphin. The temperature rose to 100.6 F. On the fourth day, however, his lightning pains had gone, and he felt so good that he remarked that he was well and needed no further treatment.

Case 7.—F. C., aged 28; latent cerebrospinal syphilis, with an absence of symptoms, but positive findings in the spinal fluid. Had a chancre in 1911, when he had had two intramuscular injections of salvarsan. In 1912 he had three intravenous neosalvarsan injections, and mercury by inunction on and off for about a year. He discontinued treatment of his own accord when he was told he had a negative Wassermann on his blood, but returned at my suggestion for a spinal fluid analysis.

Examination Oct. 20, 1914.

Blood Wassermann negative (hemolysis slow).

Spinal fluid: Wassermann and Nonne positive; cell count 48.

Treatment.—Oct. 23, 1914, first intraspinal injection 16 c.c. undiluted serum.

Second intraspinal injection 6 mg. neosalvarsan in spinal fluid (Wile's method).

Results.—The Wassermann became negative, the cell count was reduced to normal, 5 per c.mm., but the Nonne remained slightly positive.

Remarks.—There was a little reaction after the Swift-Ellis method and none after the Wile.

Case 8.—J. A. A., aged 32; latent cerebrospinal syphilis. Sore on penis five years previously, which was treated by chemical cauterization; antisyphilitic treatment instituted eight weeks afterward when he developed an eruption, and consisted of mercury by mouth for two months steady, and then iodids, and so alternating for two years. In 1912 he was advised to take salvarsan, because the Wassermann was still positive. He then took intravenous neosalvarsan monthly for four months, at the end of which time the Wassermann was still positive. He then discontinued treatment. He came under my observation Sept. 13, 1914.

Examination Sept. 16, 1914.

Blood Wassermann slightly positive.

Spinal fluid: Wassermann and Nonne positive, cell count 56 per c.mm.

Treatment.—Sept. 18, 1914, first intraspinal injection 12 c.c. undiluted serum.

Second intraspinal injection 4 mg. neosalvarsan in spinal fluid (Wile's method).

Result.—The blood and spinal fluid Wassermann became negative, and the cell count was reduced to the normal figure, 4 per c.mm. The globulin excess persisted, however.

Remarks.—After hearing the Swift-Ellis method of injection well, the patient developed a temporary paresis of the bladder and bad leg pains after the Ravaut method.

CASE 9.—L. R., aged 52 years, had tabes seven years; complained mostly of difficulty in walking, impotency and inability to control the bladder. Had had seven intravenous injections of salvarsan between January and June, 1914, and mercury by injection, with no clinical improvement.

Serologic examination, Nov. 12, 1914.

Blood Wassermann negative.

Spinal fluid: Wassermann and Nonne positive, cell count 46 per c.mm.

Treatment.—Nov. 14, 1914, first intraspinal injection 14 c.c. undiluted serum.

November 21, second intraspinal injection 18 c.c. undiluted serum.

December 2, third intraspinal injection 4 mg. neosalvarsan (Wile).

December 10, fourth intraspinal injection 4 mg. neosalvarsan (Wile).

December 17, fifth intraspinal injection 4 mg. neosalvarsan in 15 c.c. spinal fluid (Hall method).

Result.—Serology after the fourth injection yielded a negative Wassermann, a cell count of 6 per c.mm., and a positive Nonne. After the fifth injection the cell count rose to 28 per c.mm.

Remarks.—Clinical improvement was marked after the fourth injection, the gait was improved, there was a gain in weight of 10 pounds, and the bladder control was perfect. After the last modified Ravaut injection, the patient was confined to his bed, suffered intense pains in his legs, developed paresthesias, required bladder catheterizations, and had violent pains in his abdomen. The cell count and globulin increased. Further consultation was refused.

CASE 10.—K. G., aged 52, had tabes seven and a half years; chancre twelve years previously. Complained of uncertain gait and impotency. Had had mercury and iodids for his present condition for six months. The stigmata of tabes were present.

Serologic examination, Oct. 2, 1914.

Blood Wassermann not made.

Spinal fluid: Wassermann and Nonne positive; cell count 36 per c.mm.

Treatment.—Oct. 3, 1914, first intraspinal injection, 14 c.c. undiluted serum.

October 20, second intraspinal injection, 20 c.c. undiluted serum.

November 21, third intraspinal injection, 2 mg. neosalvarsan (Wile).

December 10, fourth intraspinal injection, 4 mg. neosalvarsan (Wile).

December 17, fifth intraspinal injection, 4 mg. neosalvarsan (Hall).

Result.—The serology after the fourth injection showed a slightly positive Wassermann, a cell count of 14 per c.mm. and a positive Nonne. After the fifth injection the Wassermann became strongly positive, and the cell count rose to 22 per c.mm.

Remarks.—Like Case 9, the patient was markedly improved constitutionally and felt natural, as he said. After the fifth injection, however, the condition became alarming, he was paralyzed, vomited quite a bit for the first twelve hours after the last injection, and was unable to empty the bladder. When last seen in February, 1915, he still complained of numbness in the legs, but the other symptoms had abated.

CASE 11.—M. D. F., aged 44, had tabes six years; no history of chancre. Had gastric crises and hypotonic gait, was impotent and had numbness in feet. Previous antisyphilitic treatment for present condition consisted of four intravenous salvarsan injections in 1913 and three in 1914. Stigmata of tabes were present.

Serologic examination, Sept. 26, 1914.

Blood Wassermann negative.

Spinal fluid: Wassermann and Nonne positive, cell count 28 per c.mm.

Treatment.—Sept. 27, 1914, first intraspinal injection, 12 c.c. undiluted serum.

October 4, second intraspinal injection, 14 c.c. undiluted serum.

October 20, third intraspinal injection, 18 c.c. undiluted serum.

November 14, fourth intraspinal injection, 2 mg. neosalvarsan (Wile).

November 25, fifth intraspinal injection, 2 mg. neosalvarsan (Wile).

December 10, sixth intraspinal injection, 4 mg. neosalvarsan (Wile).

Result.—Serology after the first five injections exhibited negative Wassermann and Nonne and a cell count of 5 per c.mm. After the sixth injection, the globulin excess reappeared and the cell count rose to 18 per c.mm.

Remarks.—This patient as early as the fourth injection was completely freed of his crises and was able to walk with ease. The numbness in his feet vanished. After the sixth injection, the pains in his legs became constant, had headaches, vertigo and paresis of the bladder. The cell count and globulin became pathologic again. The sixth injection was given with the idea of clinching his good status, and instead it was a month before he was in fair shape again. His bladder trouble persisted. There was no further examination made.

CASE 12.—P. H. R., aged 34; (latent) cerebrospinal syphilis; chancre two years prior to observation. Complained of frontal headaches and indefinite pains in the legs and abdomen. Antisyphilitic treatment was started in the secondary stage, with mercury by injections for one month, then iodids, so alternating for one year. Prior to consulting me, had had sodium cacodylate intraspinally weekly for his headaches.

Serologic examination, Sept. 4, 1914.

Blood Wassermann positive.

Spinal fluid: Wassermann and Nonne positive, cell count 50 per c.mm.

Treatment.—Sept. 7, 1914, first intraspinal injection, 12 c.c. undiluted serum.

September 15, second intraspinal injection, 16 c.c. undiluted serum.

September 27, third intraspinal injection, 16 c.c. undiluted serum.

October 10, fourth intraspinal injection, 2 mg. neosalvarsan (Wile).

November 7, fifth intraspinal injection, 4 mg. neosalvarsan (Wile).

November 14, sixth intraspinal injection, 4 mg. neosalvarsan (Wile).

Result.—Serology at time of fifth injection showed a negative Wassermann and Nonne and a cell count of 8 per c.mm. After the sixth injection, the cell count rose to 36 per c.mm. and the globulin excess was marked.

Remarks.—This patient, like Case 11, showed a marked recrudescence with the cumulative action of the neosalvarsan on the nervous system. Walking became difficult, he felt as though he were constantly walking on cotton, pains in the legs were unendurable, and catheterization of the bladder was necessary. These symptoms disappeared, however, in three weeks, when another spinal fluid examination showed a cell count of 22 per c.mm., and a positive Nonne, but the Wassermann was negative.

A review of these cases corroborates the findings of others, that markedly beneficial results have been obtained in cerebrospinal lues and tabes, subjectively and objectively, with concomitant serologic improvement. The easiest to respond clinically and serologically was cerebrospinal lues and then tabes. Serologically the cell count was invariably the first to improve, then the Wassermann and last the globulin reaction, which in some cases was persistently uninfluenced.

It is further noticed that invariably after the second Ravaut injection, the method brought forth unfortunate complications, due to the irritating action of the neosalvarsan on the nerve tissue. This to my mind would serve to condemn the method.

Although the patients treated have not been under observation long enough to determine whether the good results obtained will be permanent, it is my purpose to continue their treatment until definite stable results have been secured. Spinal fluid analyses will be made at six months intervals, or at shorter intervals in case of a clinical relapse, for a period of three years at least.

In view of the favorable results so far recorded in the literature, and in the absence of untoward symptoms when the original technic is employed, patients afflicted with lues of the central nervous system are entitled to intraspinal medication.

25 East Washington Street.

THE TREATMENT OF PELLAGRA BY AUTOSEROTHERAPY

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Thirty years ago blistering was considered a very valuable therapeutic procedure in the treatment of pneumonia. Its beneficial action was at that time thought to be due simply to counterirritation. The physician of that day, however, in giving directions for producing an efficient blister, laid much stress on two points: first, a real blister must be raised, and second, it must not be broken. Why must a true blister containing serum be raised and why should the serum be kept from escaping if its whole effect was simply counterirritation?

In 1911 F. Maillet[1] and in 1913 M. Fishburg[2] each reported good results in pleurisy by reinjecting some of the pleural effusion. In 1913 B. Spiethoff[3] reported eczema treated by reinjection of blood serum and Lewin[4] gave a favorable report of the treatment of carcinoma by reinjection of acetic fluid from the carcinomatous patient. Prätorius[5] in 1913 reported marked results in a case of pemphigus and recently Fox[6] of New York has given a very favorable report of autoserotherapy in the treatment of psoriasis; other reports have been published from time to time and there seems to be plenty of evidence that autoserotherapy can be made a potent factor in the therapeutic management of our most baffling diseases.

In the light of our present knowledge of serotherapy it is our belief that the benefit derived from the old-time blister in pneumonia was not due simply to counterirritation but that its effect was due to antigens produced in the serum and reabsorbed, thus stimulating the production of antibodies.

Reasoning on this basis, we were led, in June, 1913, to try the effect of autoserotherapy in the treatment of pellagra. The first case treated was a colored boy, bedfast and in the last stages of the disease, but the beneficial effect of the treatment was so marked that we have tried it out carefully in seven cases with the most gratifying results.

1. Maillet, F.: Gaz. d. hôp., March 25, 1911.
2. Fishburg, M.: Autoserotherapy in Serofibrinous Pleurisy, The Journal A. M. A., March 29, 1913, p. 962.
3. Spiethoff, B.: Med. Klin., June 15, 1913.
4. Lewin: Therap. d. Gegenw., June, 1913.
5. Prätorius, P.: Diagnosis of Anthrax from Spinal Fluid, München. med. Wchnschr., April 22, 1913.
6. Fox, Howard: Autogenous Serum in the Treatment of Psoriasis, The Journal A. M. A., Dec. 19, 1914, p. 2190.

Case 1.—May, 1913: A colored boy, aged 10, with marked skin lesion of hands, forearms, feet and part of face. Patient had sore mouth and liquid stools daily. Was emaciated and weak, and confined to bed for several weeks.

After two injections the bowels became quite normal and patient improved so much that he returned home to San Antonio. It was impossible to continue the treatment of this case and we lost track of him.

Case 2.—June, 1913: Mrs. J. B., white woman, married, no children, aged 35, refined, above average intelligence, from good family. Patient had diarrhea five months (diagnosed tuberculous). When seen by us there was a typical pellagra dermatitis over hands, forearms and sides of neck. She had a sore mouth and marked nervous symptoms. We treated her for two months with arsenic preparations and at first she improved, but later developed marked nervous and mental symptoms, typical melancholia. We then gave her autoserotherapy and she improved from the first dose. She received five doses and is to-day in better health than she has been for several years and no symptom of pellagra is present.

Case 3.—May, 1914: Mrs. W., a white woman, of good family, married, aged 36, four children. Patient had dermatitis, diarrhea, sore mouth, head pains and nervous symptoms. Case was diagnosed as pellagra by Dr. S., a physician in San Antonio and patient was treated by injections of sodium cacodylate. There was considerable improvement for a time but later nervous symptoms became more marked and patient was sent here. We tried arsenic preparations with no apparent result and then used the autoserum. Improvement began at once, but every week or two she would have a nervous spell. At first these were severe melancholic attacks, but within six weeks all mental symptoms disappeared, she had gained 8 pounds and was feeling well except for slight nervousness at times. This patient remained under treatment three months and returned home, apparently as well as ever. In this case we found that small doses of Fowler's solution (3 drops after meals) for two days every two or three weeks seemed to increase the beneficial effect of the serum. We note that Fox has made a similar observation in his treatment of psoriasis.

Case 4.—July, 1914: A white woman, aged 45, widow, one child. Patient was sent here from Austin for "nervousness." This case presented the nervous and gastro-intestinal symptoms in mild degree only, but her history of a previous dermatitis and sore mouth made a diagnosis of pellagra clear. It was not of the rapid, acute type, like Cases 1, 2 and 3, but the symptoms had been present for two years with fall and spring exacerbations.

After three weekly injections, this patient was so improved that she and her son took a tent and camped out near Kerrville during the summer and she returned home in the fall very much improved. We have now lost track of this case.

Case 5.—July, 1914: A white woman, aged 25, was sent to Kerrville from Corpus Christi to aid convalescence from a protracted diarrhea. From history and clinical findings, diagnosis of pellagra was made and two injections given; patient was better but disappeared and we lost track of her.

Case 6.—June, 1914: A white man, aged 35. Seen in consultation with Dr. C. C. Jones of Comfort, Texas. A perfectly typical, acute case of pellagra with very severe symptoms from the beginning. Dr. Jones gave this man six injections of autogenous serum at intervals of one week, and a few days ago showed us a letter just received from him in which he stated that he was perfectly well, all symptoms had disappeared and he had gained much in weight. He gave all the credit to the injections.

Case 7.—November, 1914: Mrs. K., a white woman, aged 35, three children. Has had nervous symptoms for two years and came to the hospital for operation. Examination revealed typical dermatitis of pellagra on forearms, hands and sides of neck, sore mouth, marked nervous symptoms and head pains, but in this case there was a constipation instead of diarrhea as in all the other cases. This patient improved from the first injection but is still under treatment. The improvement has been most marked in the nervous symptoms.

In fact we have noted in other cases that improvement was first seen in the nervous symptoms.

The foregoing list of seven cases is not a selected list, but includes all of the cases that we have treated by this method to January 1, 1915. Every one has shown improvement. Two patients, Cases 2 and 3, are well, having passed critical seasons without recurrence of symptoms. Two others, Cases 6 and 7, are to all appearances well, but they have not passed a spring and fall season yet to test the permanence of the cure. In Cases 1, 4 and 5, the patients, while much improved by the treatment, were lost track of.

Our technic in using autoserotherapy is simple, rational and effective. A piece of cantharides plaster 1½ inches square is smeared with olive oil and placed on the chest at bed time. In the morning a blister will be raised. The plaster is not now removed but is simply lifted at an upper corner, and a hypodermic needle is introduced into the blister from the top. One c.c. of serum is withdrawn and injected into an arm. There should be no visible reaction.

In Case 3, we tried a 2 c.c. injection with the result that the symptoms were aggravated, and from our studies, 1 c.c. given once a week seems to give the best results. In the acuter cases, a shorter period may intervene between injections, but, on the whole, from five to seven day intervals seem satisfactory.

THE EMETIN HYDROCHLORID QUESTION IN THE TREATMENT OF PERIODONTAL DISEASES (PYORRHEA ALVEOLARIS)

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The claims which have recently been made, that endamebas are the cause of periodontal diseases (pyorrhea alveolaris) and the published reports of the successful treatment of cases by the use of emetin hydrochlorid, call for a better understanding of these lesions, and, also, of the conditions which can be accepted as a cure of them.

OPINIONS REGARDING ENDAMEBAS

There can be no doubt that endamebas are to be found in the majority of pyorrheal pockets, but the exact rôle they play in these locations is not yet definitely understood.

Bass and Johns[1] of Tulane University Medical College, who have recently studied these endamebas, state definitely that they are the cause of periodontal diseases. They base this statement on the fact that they have found endamebas in the deepest parts of these lesions, and have failed to find them in healthy mouths, and also that they notice a marked improvement in the appearance of the involved tissues when the endamebas have been destroyed by the use of emetin hydrochlorid. They say, "These enedamebas are not known to live on open surfaces."

Smith and Barrett of the University of Pennsylvania, who have also carried on investigations along these lines, are less certain that endamebas are the cause of all pyorrheal lesions. Barrett says:[2] "It should be stated here that none of those who have been engaged in this study have held or now believe that all cases of pyorrhea are due primarily or alone to the presence of the oral endamebae." He calls attention to the fact that they often contain a large number of bacteria, as well as remnants of leukocytic nuclei and erythrocytes. He also speaks of an improvement in the affected tissues after the emetin hydrochlorid treatment has been employed, and gives this as his chief proof in establishing the pathogenicity of these oral endamebas.

Angelo Chivero of the Royal University of Rome, after making a thorough study of oral protozoa, says that he has found *Endameba buccalis* in the pus of all pyorrheal pockets, but believes they may even be beneficial. He says:[3] "The endameba has not a pathogenic action; on the contrary, as it feeds on bacteria, it is most probably an aid to the autodisinfection of the mouth." He also finds that they get into a state of encystment in the oral cavity, and, therefore, do not represent a stage in the development of either *Endameba histolytica* or *Endameba coli*. He has discovered endamebas in the materia alba which collected around teeth in healthy mouths where cleansing had purposely been omitted for a few days.

OTHER MICRO-ORGANISMS TO BE CONSIDERED

Whether endamebas play any part in causing pyorrheal pockets or not, one thing is certain: once these pockets are formed, they always contain several strains of micro-organisms living symbiotically. One of these, the *Treponema mucosum*,[4] recently discovered by Noguchi of the Rockefeller Institute, deserves special notice. The organisms are small spirochetes which live anaerobically, are mucin-forming, and produce the odors which are characteristic of periodental diseases. These facts have led Noguchi and others to believe that they cause these diseases.

Barrett,[2] after his extensive investgation as to the cause of periodontal diseases, still believes that pathogenic bacteria play an important part. Speaking of the *Endameba buccalis* in these lesions, he says:

> There have been a few cases in which they have not been discovered, and in any case it would be illogical to deny associated importance to the myriads of other organisms which are also found in the lesion.

A BRIEF DESCRIPTION OF PYORRHEAL POCKETS

Whether or not the infection which commences in the gingival sulcus is entirely due to pathogenic bacteria or to endamebas, if it is permitted to continue, the pericemental fibers become detached from the cementum at that point; atrophic changes occur in the pericementum and the margin of the alveolar process is absorbed. As this detachment of the pericementum increases, portions of it are frequently destroyed. In these cases one may find exposed margins of bone in the deeper portions of the pockets. While these tissues are being detached from the cementum, the calcium salts which are held in solution in the blood escape from the broken vessels and precipitate on the surface of the cementum. Sometimes these calcic deposits form coarse, irregular nodules. In other cases they may be so thin and hard, and so thoroughly embedded into the porous surface

1. Bass, C. C., and Johns, F. M.: Pyorrhea Dentalis and Alveolaris, THE JOURNAL A. M. A., Feb. 13, 1915, p. 553.
2. Barrett, M. T.: Clinical Report on Amoebic Pyorrhea, Dental Cosmos, December, 1914, p. 1345.
3. Chivero, Angelo: Researches on the Entamoeba Buccalis, Dental Rev., December, 1914, p. 1133.
4. Noguchi, Hideyo: Treponema Mucosum, a Mucin-Producing Spirochaeta from Pyorrhea Alveolaris Grown in Pure Culture, Jour. Exper. Med., 1912, xvi, 194.

of the cementum, that it requires experience to detect them.

The atrophic changes which take place in the supporting structures when they become detached from the cementum, frequently leave a portion of the roots exposed to view, but in the majority of cases the tissues simply become separated, and form pockets of varying depths. A lesion of this character may develop on one side of a root while the tissues on the other side may remain almost normal. These pockets sometimes reach a depth of from 12 to 14 mm. beneath the gingival margin of the gum.

Periodontal diseases are so frequently met with that it is almost impossible to find an adult patient who does not show at least the incipient stages of them around some of his teeth. The insidious way in which they begin usually results in the formation of numerous pyorrheal pockets before the patient suspects that anything is wrong.

RESULTS SECURED BY THE EMETIN TREATMENT

The writers who advocate the use of ipecac or its alkaloid, emetin hydrochlorid, to destroy amebic life in pyorrheal pockets, all report considerable improvement in the involved tissues after the treatment has been employed. None of them, however, makes any claim that it removes the pockets. They casually mention in this connection such additional measures as the removal of calculus. The question at once arises as to whether it is the use of emetin or the removal of these deposits which has brought about the changed condition.

Bass and Johns,[1] describing the results they have secured by employing emetin hydrochlorid, say (p. 556): "After the endamebas have been destroyed by the emetin treatment, however, there are still left the lesions which will require days, weeks or months to heal." In explaining what they mean by healing, they say (p. 556):

> It is an important question in this connection as to whether the periosteum or a substitute tissue can be regrown to fill the space between the root and the alveolar process after it has once been destroyed, even though we stop the destructive process. We have not seen any evidence that this can occur to any considerable extent.

Barrett[2] makes practically the same statement in reporting the results he secures from the emetin treatment, saying (p. 1349):

> Of these seventy-three cases, all but one may be said to have been cured of pyorrhea, and to have now, as far as reexamination has been possible, the peridental tissues in a good healthy condition. By this the writer means that the suppuration ceased after the use of emetin, and, with the few exceptions below referred to, has remained absent (at longest, thus far, for five months). The redness, swelling, bleeding and painfulness of the tissues have likewise disappeared; in some cases the pockets seem to have filled in with new tissues to a slight extent, although there is not apparent any growth of the gums about the exposed roots.

They frankly admit in these statements that the pockets still remain after the emetin treatment has been employed, and we know it does not destroy all of the bacteria; therefore, these bacteria must continue to endanger the health of the patients when carried by the blood stream from these foci to all of the tissues throughout the body. This systemic phase of the subject, however, must be reserved for consideration in a subsequent paper.

In fairness to these writers it should be stated that many of the leading dental authorities contend that it is not possible to secure a reattachment of these structures to the roots, as all of the tissues which would be necessary to take part in this reunion have been destroyed, and that, therefore, palliative treatment is all that can be given. This, however, is not the case, as will be shown later.

WHAT CONSTITUTES A CURE

It must be conceded that periodontal diseases are not cured until the pyorrheal pockets have been obliterated. This can be accomplished in but three ways: by the extraction of the tooth, by the removal of the separated supporting structures to the level of the floor of the pocket, or by the vital reattachment of these tissues to the cementum. It is the necessity of securing this reattachment that I wish to emphasize. I find that when correct surgical methods are employed the tissues not only form a vital reattachment to the roots of living teeth, but in the majority of cases the healing is of a rapid, primary character.

CONDITIONS WHICH PERMIT REATTACHMENT OF TISSUES

Nature requires the same conditions here which are necessary to permit a union of tissues to take place in other parts of the body. That is, tissues to be united must have freshly exposed, living cells on each surface, and these surfaces must remain in undisturbed contact for sufficient time to permit Nature to unite them. To produce these conditions, it would not be sufficient to destroy the amebic and bacterial life in these pockets, if such were possible, or even to add to this the removal of all of the calcic deposits from the cementum. What is necessary is first thoroughly to remove all of the calculus with surgical instruments, and then to scrape the cementum just enough to leave a freshened living surface. While it is absolutely necessary to secure this freshened surface on all of the involved cementum, great care should be taken not to scrape through the outer dense lamella and expose the lacunae in the deeper portions. This is an exceedingly delicate and difficult operation, because these surfaces are covered by the separated supporting structures and one must rely entirely on the sense of touch.

The inner surfaces of the separated soft tissues are usually in an unhealed, bleeding condition, and, therefore, no attempt should be made to increase this; on the contrary, extreme care should be exercised to prevent the instruments from lacerating or bruising them. When these precautions are taken, the natural contractility of the tissues holds them in that close relation to the roots which is necessary to permit the reunion to take place. Exposed margins of bone in the bottom of the pockets should be carefully curetted.

Attention must be called at this point to three valuable properties of the blood in the treatment of these chronic infections; it is cleansing, bactericidal and reconstructive. When the soft tissues are left in this close relation to the roots, it would be difficult to remove the loosened particles of calculus from the wound by washing. On the other hand, since liberated blood has the tendency to coagulate, it incorporates these loosened particles in the meshes of its fibrin and in this way it assists the instruments in bringing them to the surface. With this careful method of operat-

ing there is very little hemorrhage, but even this slight trace is sufficient for cleansing. Consequently, it is better not to wash the wound at any time after the operation is commenced.

One should avoid lacerating or bruising the separated soft tissues during the operation, in order that they may be left in a favorable condition for healing. When this precaution is taken, the patient experiences so little discomfort that anesthetics are quite unnecessary. Their introduction into the tissues hinders the process of healing. Antiseptics and germicides should also be avoided. It should be remembered that even a normal salt solution is not strictly isotonic to the exposed cells on which we rely for repair. We must then depend entirely on the bactericidal action of the blood and fixed cells to destroy the remaining pathogenic micro-organisms which our surgical work leaves in the wounds. We are dealing in these cases with chronic infections, where these organisms have lived for considerable time in close contact with unhealed tissues and open blood vessels. This has forced the tissues to fortify themselves with antibodies to meet the various strains of these invading organisms. I believe we have proof of this in the fact that if some of these pathogenic organisms were introduced into the tissues of one who had not previously been their host, a dangerous infection would follow; but, here, no increased infection occurs when they are carried deeper into the tissues by our surgical instruments. I also find that the inflammatory condition of the gums disappears within twenty-four hours after the operation and rapid healing ensues, if correct surgical assistance is given. This shows that a greater production of antibodies by stimulation with autogenous vaccines is quite unnecessary.

No polishing agents should be used around these teeth after the operation is performed, until the healing of the wounds has advanced sufficiently to tolerate it.

By avoiding the use of these agents, we permit the blood that is left in the wound to organize, and this plays an important part in the reunion of the structures. I have therefore called this "the blood-clot method," not because there is much hemorrhage, but because we carefully avoid destroying the clot.

This vital reattachment does not take place to the roots of pulpless teeth. The denuded portions of cementum in these cases could not continue to live after the pulps have been removed, as this shuts off the only remaining source from which they could receive nutrition. The tissues simply granulate and tighten around such roots, for living and dead tissues cannot unite. I also fail to secure this reattachment in cases in which the disease has penetrated the narrow bifurcation of roots at points where it is impossible to produce the necessary freshened surface on the cementum.

A case will serve to show the extreme possibilities which are offered to us by surgical treatment.

Mr. H., aged 35, presented himself for treatment in March, 1910. The gums had receded; all of the teeth were very loose; the lower right central incisor had been removed by his fingers; the lateral incisors could have been removed in the same manner; great quantities of pus constantly formed in the deep pockets around these teeth. A rapid reattachment of the tissues followed the surgical treatment and the teeth gradually became very firm. The rapid healing prevented any further recession of the gums. This patient spent a year and a half in Europe, during which time his teeth received no care beyond such cleaning as he was able to give them himself. When he returned last January his gums were in perfect health. At the present time his teeth require no artificial supports, and are so firm that he can masticate the hardest kind of food with comfort.

CONCLUSIONS

It is necessary in the interest of science, that we study *Endameba buccalis* more thoroughly to determine, if possible, whether or not it is an etiologic factor in periodontal diseases.

More extensive experimental work should be carried on with the emetin hydrochlorid treatment in order that we may know whether the improvement which is noticed in the tissues is the result of the destruction of the endamebas by this agent, or due to the removal of the calcic deposits from the cementum.

The published reports of those who advocate the emetin treatment clearly state that although they have succeeded in destroying the endamebas, they have failed to obliterate the pockets which contained them. Periodontal diseases are not cured until the pyorrheal pockets have been entirely obliterated. It has been found that the separated tissues will form a reattachment to the roots of vital teeth when proper surgical assistance is given. This reunion removes all traces of the pyorrheal pockets.

Since this reattachment of the tissues can be secured to the roots of living teeth without the aid of endamebacides, it would seem that such healing does not depend on either the absence or presence of endamebas, but entirely on the character of the tissues and the thoroughness of the surgery.

ANATOMIC NOMENCLATURE

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On the various structures of the human body there has piled up such a mass of technical terms that the science of anatomy staggers beneath its own terminology.

The student who reads of the third eye, median eye and parietal eye readily learns that these three terms are given to the same structure. He soon finds that pineal body, pineal gland, pineal organ, parietal body, parietal gland, and parietal organ are six more terms used to designate the same structure. In the common textbooks he will find corpus pineale, glandula pineale, epiphysis and epiphysis cerebri, which are four more terms for the same structure. From his medical dictionary he adds to these conarium, pinus and penis cerebri. With these sixteen synonyms in mind he is prepared to read the English articles concerning this structure. If he wishes to gather what has been written by the French and German authors, he must at least double this number of synonyms.

This is only a typical illustration of the time and energy consumed in acquiring a working vocabulary. Contrast this condition with that found in electrical science, in which the student finds universal terms, such as ampere, ohm and volt.

Such a status is so harmful to teaching and so stifling to research that many attempts have been made to free the student, teacher and investigator from this incubus. Some progress was made by Henle, Gegenbaur, Krause, Sappey, Testut, Quain, Macalister,

Wilder and others. These individual efforts, however, have never obtained general recognition. It thus became more and more apparent that any list of terms must have more than individual prestige, and that some cooperative plan was necessary.

Such a plan was outlined by the German Anatomic Society at its first meeting in Leipzig in 1887, and its officers were requested to work out the details. The officers selected a revision commission which was enlarged from time to time, until it included the leading anatomists of the world. Those who took an active part in the work were von Bardeleben, Braune, Cunningham, Henke, O. Hertwig, His, von Kölliker, Kollman, Krause, von Kupffer, Lebocq, Merkel, von Mihalkovics, Rüdinger, Thane, Toldt, Turner, Waldeyer and Zukerkandl.

Certain limitations and fundamental principles were agreed on at the beginning; others arose as the work progressed. The work was limited to descriptive human anatomy, and further restricted to the names of those structures which can be seen by the unaided eye, or at most by the aid of a simple hand lens. Latin was adopted as the official language. As the work progressed, a number of rules were adopted, yet none became a rule without exceptions. The more important of these were the following: Each part to be named shall have only one name; the name must be grammatically correct; the name must be as short and simple as possible; the names shall be simply memory signs and need not be explanations. Related terms, as far as possible, shall be similar, for example, femur, arteria femoralis, vena femoralis, nervus femoralis. Adjectives, in general, shall be arranged with their antonyms, as dexter, sinister; major, minor; superficialis, profundus.

The commission, under the guidance of its editor, W. Krause, extended its work over a period of six years. From upward of 30,000 Latin terms about 4,500 were selected. Many of these terms could not be agreed on, either through correspondence or personal discussions, but had to be decided on the basis of special dissections. On one point the commission was unable to reach a conclusion, and this was concerning the retention of proper names. This was finally settled by including them in brackets following the objective names, thus leaving to time the final decision on this point. In some of the modern textbooks they are included. In the textbook by Krause, editor-in-chief of the commission, they are not included. When the list was nearly completed it was turned over to a special editing committee, consisting of His, Krause and Waldeyer. After each term had been subjected to a thorough reexamination by this committee, the whole list was presented for final criticism to the anatomic society at its annual meeting in Basle in 1895. After careful consideration it was finally adopted. It has since been known as the "Basle Nomina Anatomica," or by its official abbreviation, BNA. It was at once adopted by the great majority of European anatomists and has since been accepted by American anatomists. It is safe to add that the greater part of the anatomic literature of the world is accessible only to those who have acquainted themselves with the BNA.

During the twenty years since its adoption, each term has been carefully studied, and some pertinent suggestions have been made. Lesbre says that the terms should be applicable in comparative anatomy. Chaine would have the muscles so named that the terms could be used in comparative myology. Braune suggests changing the names of the arteries of the hand and foot so that the names could be used for similar arteries in domestic animals. Some day we may be able to bring about these desired improvements, but this cannot be done until homologies are better known. The fields of comparative osteology and myology are still under investigation, while the unraveling of the homologies of nuclear masses and fiber tracts in the central nervous systems of vertebrates scarcely has begun.

Other suggestions have been made concerning the significance of certain terms. Von Bardeleben says that it is inconsequent to call the gland beneath the mandible "glandula submaxillaris," since it is obviously a glandula submandibularis. Austerlitz takes exception to the term "thalamus opticus," since it is no sleeping room; to "aquaeductus cerebri," since it contains no water. Had these names been changed by the commission why should they not have dropped "acetabulum," since it is no vinegar cup, "hippocampus," since it is not a sea horse, "zygoma," since it is not an ox yoke? "Plexus" lymphaticus is not a crazy plexus; "nervus pudendus" is not a shameful nerve. In short, any attempt to have substituted objectively correct terms would have been in direct opposition to the aim of the commission. Its aim was to select the most suitable terms from the many in current usage or from those which had previously been used.

Triepel, after carefully studying the BNA, suggests substituting certain terms for those adopted, namely: articulus for articulatio; bifurcus for bifurcatus; bipennis for bipennatus; dorsualis for dorsalis; glomeriformis for glomiformis; glomerulum for glomerulus; lumbaris for lumbalis; plicatura for plica. Were these changes made as suggested by Triepel, they introduce nothing more than a different spelling of the same words. On the whole, it may be said that the more critical the study of the BNA, the more apparent becomes its merits.

The question as to whether terms should be written in Latin or in the language of the author is a matter of choice. The commission expressly states that while its official language is Latin, it does not wish to impose the slightest restriction on the translation of these terms into any language. Anatomists, however, are using quite uniformly the Latin terms, and are thereby greatly facilitating the development of anatomic science through a common language.

Since the BNA has become the language of the anatomists, may they not hope for the cooperation of the clinicians in clearing the field of the thousands of useless synonyms? At the present day it is scarcely possible to find a students' textbook on any clinical subject which evinces the slightest concern as to the uniformity of its anatomic terms.

Several years ago Professor Barker of Johns Hopkins University made a most forceful appeal for the adoption of these anatomic terms. In order to facilitate their introduction, he reprinted the BNA, translated the terms into English, and gave the common English equivalents.

Despite the efforts to persuade the clinicians to adopt this language, little progress has been made. The words of Professor His of Leipzig to the anatomists in 1887 concerning their nomenclature might well be repeated to the clinicians of today: "An anarchy here reigns, under which teachers and pupils equally suffer, and which necessarily retards investigation."

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CASE REPORTS OF SURGERY OF THE SPLEEN

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The scarcity of case reports on splenic surgery has prompted me to report the following cases:

CASE 1.—*Abscess of the Spleen.*—Mr. E. L., Bessemer, Ala., aged 42, merchant, whose father had died of pneumonia, whose mother was living in good health, and who had four brothers living in good health, and one brother who had died of tuberculosis, never had typhoid fever or any other prolonged illness, and his past history was practically negative except for the usual diseases of childhood. He had syphilis twenty years ago. For the past nineteen or twenty years he has been a hard drinker. He has drunk daily in large quantities, and periodically has drunk to excess, has suffered from indigestion for the past fifteen years, has been a hearty eater, and vomits quite frequently early in the morning. In October, 1909, he had several chills followed by fever and excessive sweats. In November his condition became worse and he was compelled to remain in bed. His temperature, at that time, ranged from 99 to 102 F., and the pulse was about 100 with little variation. The doctor in attendance says he was never able to find him with a normal temperature. He ran a continuous fever for six weeks. He suffered with excessive headaches, but otherwise complained of no pain about the body up to this time.

At the end of the seventh week he complained of some pain in the splenic region. The Widal was negative. Three examinations were made. Bile cultures of the blood were also negative. An examination for the *Plasmodium malariae* was negative; the white blood count for some time ran about normal; a differential count showed a slight increase of the polymorphonuclear variety, and was not increased in the cosinophils. The pain over the area gradually became more severe since its onset.

The man was of a large frame and had possessed powerful muscles; his average weight had been about 240 pounds, but he showed a marked loss in weight; the skin was of a muddy color and his hemoglobin was about 70 per cent. An examination of his eyes showed that the pupils reacted to light and distance and that there was a considerable tortuosity of the veins in the eyegrounds. The lungs and heart were negative, the blood pressure 120. The liver was freely movable on inspiration and expiration, and seemed to be normal in size. There was no tenderness over the epigastric area, nor was it painful in this locality. The spleen was very much enlarged and quite tender (Jan. 5, 1910). As outlined by palpation and percussion, the upper border of dulness began at the lower border of the fifth rib in a midaxillary line and then followed a rather sharp curve inward and downward, crossing the margin of the ribs at the ninth costal cartilage; it continued thence in a straight line downward to a point corresponding to about 2 inches below the umbilicus, and thence across the iliocostal space in a direction slightly upward and backward to the spine. From the uppermost point of dulness in the midaxillary line the organ extended posteriorly in a line slightly downward and backward to the spine. The spleen was not movable, or if so, slightly; the blood examination at this time showed white blood count, 12,000; red blood count, 4,300,000; hemoglobin, 70 per cent. Another Widal examination was made which was still negative, as also was the examination for malaria. The urine showed specific gravity 1.020, albumin, hyalin and granular casts, and no sugar. A diagnosis of abscess of the spleen was made, and operation advised, which was done Jan. 17, 1910. An incision was made over the mass external to the outer border of the left rectus muscle. The spleen was demonstrated and within this organ an abscess was found which contained about 500 c.c. of brownish pus, which was evacuated. There were also quite a number of large sloughs of the spleen removed from the cavity at this time. This large cavity bled quite profusely following the relief of tension after escape of the pus. Several abdominal packs were placed in the abscess cavity to control this bleeding. Convalescence was rapid, and at the present time, five years since operation, the patient is in perfect health. The report of the bacteriologic examination of the pus made by Dr. McLester was as follows:

"Smears made from the pus show disintegrated tissue and a rather large number of cocci. These cocci are arranged in pairs and tetrads, and show no attempt at chain formation. A few were found within the polymorphonuclear leukocytes. These cocci take the stain by Gram's method. Inoculations on agar and on blood serum give most luxuriant cultures within twenty-four hours, grown either in the incubator or at room temperature. This growth consists of yellowish elevated, opaque, rounded colonies with sharply defined edges, and the appearance of the growth is practically the same on both mediums mentioned. There is no growth in ox bile. Microscopic examination of the growth shows it to be a pure culture of a coccus arranged in large masses and clusters; no formation whatever is seen. This organism takes the stain by Gram's method.

"Diagnosis: *Staphylococcus pyogenes aureus.*"

CASE 2.—*Abscess of the Spleen.*—C. W. H., Bangor, Ala., white man, aged 67, farmer, weight 268 pounds, was referred to me April 1, 1912. His past history was negative except for chronic asthma for quite a number of years, which was accompanied by the usual bronchitis seen in these cases. His present illness began a few days before he was sent into the South Highland Infirmary. While walking through the field he was taken with sudden pain in the splenic region. He was carried to his home and his family physician called, who within a few days brought him to me.

He was a very large fleshy man. The heart was negative. The lungs showed a diffuse bronchitis, and he was suffering with an acute attack of asthma at this time. In the splenic region was quite a large mass which was quite tender on palpation. Blood examination revealed white blood count, 21,000; hemoglobin, 85 per cent.; blood pressure, 130. The urine contained albumin, and hyalin and granular casts. A diagnosis of abscess of the spleen was made. An operation was advised and the patient's friends informed of the risk attending this, owing to the general condition of the patient and the crippled condition of his lungs and kidneys. Under nitrous oxid and oxygen anesthesia an incision was made over the enlarged spleen, and after cutting through an abdominal wall about 6 inches in thickness, we came on a large accumulation of blood clot and serum, which after removal left quite a cavity. This cavity seemed to be within and posterior to the spleen. Several large packs were inserted into the cavity as the bleeding from the spleen was quite free after the blood clots and serum were removed.

The patient was returned to bed in good condition and his recovery was uneventful. It is now two years since operation and he is in good health.

CASE 3.—*Splenic Anemia.*—Mrs. T. J. R., white, aged 26, married, American born, entered the infirmary Nov. 5, 1911. Her father died when quite old of some unknown cause. Her mother died of congestive chill. Two brothers are dead; one died in infancy, the other through accident. She has eight sisters, all living and in good health.

The patient had jaundice when 4 years old, and a second attack two weeks previous to entrance into the infirmary. She does not think she ever had a spell of fever of any kind except following the birth of both of her children. Menstruation began at 14 years. It was regular, scanty and lasted for only one or two days; at this time she suffered quite a little pain. She has been married about five years, and is the mother of two children, the oldest being 3 years of age, the youngest 1 year. The labors were normal but were followed by infection each time which confined her in bed several weeks.

The present illness began five years ago with vomiting of blood, which was about a half a cupful. The blood vomited was very dark red. Since this time she had vomited blood almost daily in small quantities up to October, 1910, and since this time about once a month. She suffered no pain; the appetite was poor. The bowels moved from

three to five times daily; there was no blood in the movements. She suffered from nausea, headache and vertigo. She said her temperature was usually elevated in the afternoon. She had no cough.

Examination revealed a very frail, anemic woman whose skin showed a marked icteroid hue and one would think she had lost much flesh during the past few months. She said her weight now was 90 pounds, and that she had lost 25 pounds during the past year. Her lungs and heart were found to be negative. She had no enlarged glands in the neck. The thyroid was not enlarged. The tongue was very pale, and the gums and lips showed a marked anemia. The liver was uniformly enlarged but was freely movable on deep inspiration. The abdomen was much distended by a large tumor which occupied the left hypochondriac region, part of the epigastric, lumbar and the umbilical regions. The tumor was slightly tender from pressure and was fixed posteriorly. The inguinal glands were not enlarged. The patient's feet and ankles showed marked edema.

Vaginal examination revealed a retrodisplaced and fixed uterus which was quite tender. The urine showed a trace of albumin; otherwise it was negative. Blood examination, Nov. 5, 1911, revealed: white blood count, 5,850; red blood count, 1,776,000; hemoglobin, 25 per cent. (Sahli); color index, 0.89. Differential count revealed small lymphocytes, 30.6 per cent.; mononuclears, 20 per cent.; polymorphonuclears, 43.6 per cent.; eosinophils, 2.3 per cent.; mast cells, 0 per cent.; myelocytes, 3.5 per cent. On account of the long period of years covered by illness, the hemorrhages, etc., a diagnosis of chronic splenic anemia, or Banti's disease, was made and the patient was advised to stay in the infirmary in order to see if she could not be gotten in better condition for operation. She did not improve but seemed to grow worse.

Blood examination, Nov. 20, 1911, revealed: white blood count, 5,400; red blood count, 1,520,000; hemoglobin, 19 per cent. (Sahli instrument used.) Color index, 0.65. Differential count revealed: small lymphocytes, 22 per cent.; mononuclears, 20 per cent.; polymorphonuclears, 56.5 per cent.; mast cells, 5 per cent.; myelocytes, 1 per cent.

The patient was dismissed from the infirmary as an inoperable case, Nov. 26, 1911, a blood examination on this date showing the same as on the 20th. She returned home, and under treatment she improved to some extent and was returned for operation March 17, 1912. Her condition at this time was not good, but was somewhat more favorable for surgical interference. The blood examination at this time revealed: white blood count, 4,500; red blood count, 2,500,000; hemoglobin, 45 per cent. Her temperature on admission was normal, pulse 78, volume poor. The urine contained albumin. She was prepared for operation for the following morning, and under nitrous oxid and oxygen anesthesia the very large spleen was removed. It weighed 48½ ounces. Many adhesions were encountered and the bleeding gave some trouble, but the patient left the operating table in good condition. The temperature rose at once to 103.8, pulse 132, but they both came down to normal in a few days. For some days the patient would have a distinct rise of temperature, but the pulse remained normal or nearly so, even when one of the sharp rises of temperature would indicate that we had trouble.

The blood picture after operation was interesting (Table 1). The examination was by Dr. McLester.

The characteristic blood findings in splenic anemia are a leukopenia and anemia of the secondary type.

The patient was dismissed from the infirmary April 14, 1912, very much improved.

January, 1913, a report from the patient was to the effect that she had gained about 30 pounds and that her health was perfect.

Pathologic Report (by Dr. James S. McLester).—The spleen weighs 48½ ounces and measures 10¼ by 6½ by 3½ inches. Its surface is smooth and glistening and is perhaps a little darker in color than the normal spleen.

The fibrous capsule is very much thickened. The cut surface shows very distinctly the fibrous trabeculae. Microscopic examination shows the greatly thickened capsule and some, though not marked, increase of the fibrous reticulum.

No proliferation of the endothelial cells can be noted. The malpighian bodies, while smaller than usual, are well preserved.

The most striking feature of the microscopic picture is the great number of eosinophils. These cells are very frequent and are scattered evenly throughout the tissue. An average of about eight is seen to the field (section of 6 to 8 microns, Winkel 3 mm. objective and No. 3 ocular).

The great number of eosinophils suggests Hodgkin's disease. On the other hand, the clinical history, the complete absence of glandular enlargement elsewhere, the increase in the fibrous elements and the absence of endothelial growth point to the splenomegaly seen in Banti's disease. In the light of our knowledge, I think we are forced to place this spleen in the latter class.

TABLE 1.—BLOOD COUNTS IN CASE 3

3/21/13	White blood count	11,200
	Red blood count	11,900,000
	Hemoglobin	45 per cent.
	Differential count 500 cells counted.	
	Polymorphonuclears	75 per cent.
	Small mononuclears	9 per cent.
	Large mononuclears	3 per cent.
	Eosinophils	12 per cent.
	Transitionals	0.3 per cent.
	Nucleated reds	0.4 per cent.
	Basophils	0.3 per cent.
3/29/13	White blood count	18,000
	Red blood count	3,000,000
	Hemoglobin	55 per cent.
	Differential count 500 cells counted.	
	Polymorphonuclears	78 per cent.
	Small mononuclears	15 per cent.
	Large mononuclears	1 per cent.
	Transitionals	1 per cent.
	Eosinophils	5 per cent.
4/ 8/12	White blood count	37,700
	Red blood count	3,500,000
	Hemoglobin	70 per cent.
	Differential count 500 cells counted.	
	Polymorphonuclears	86 per cent.
	Small mononuclears	11 per cent.
	Large mononuclears	1 per cent.
	Eosinophils	2 per cent.
4/15/12	White blood count	17,000
4/20/12	White blood count	10,000

CASE 4.—*Splenic Anemia.*—F. D., man, aged 26, born in Sicily, with negative family history, had been a farmer by occupation. He had been a hard worker. He never used alcohol. He had always been a hearty eater. He came to America two years ago. His past illness had consisted in periodic attacks of malaria. As a young man in Sicily he had a spell of fever lasting about four weeks. Six years ago he was rejected by the military authorities in his native country on account of a large tumor in the left side. Up to this time the patient said he knew nothing of the existence of a tumor. He thought that he had had smallpox at 19 years of age. He said that he had been growing weaker for years, but consulted a doctor only two months ago for severe pain in the left side over the region of the tumor. This pain would run upward toward the left shoulder. The bowels moved regularly. He had had occasional small hemorrhages from the bowels which he supposed to be "internal piles," and also one or two hemorrhages from the lungs.

On examination the patient's lungs and heart were found normal. The liver was very slightly enlarged and freely movable. There was no tenderness over the gallbladder or appendix. The kidneys were normal. A large mass could be felt in the left hypochondriac region, which also extended deeply into the left lumbar region. The mass could be seen to glide under the anterior abdominal wall on deep inspiration and expiration, but seemed to be firmly fixed posteriorly and quite tender on palpation and percussion. The urine was negative. Taking into consideration the blood picture and history, a diagnosis of Banti's disease of splenic anemia was made and operation advised.

Operation and Result.—Under gas-oxygen anesthesia an incision was made beginning under the costal region near the ninth costal cartilage and extending downward and outward for about 8 inches. The enlarged spleen was exposed.

Externally many adhesions were found to exist between this organ and the abdominal wall, and on breaking these up a pocket of pus was found. The adhesions throughout were found to be plentiful and the bleeding very troublesome as every denuded area seemed to weep blood. Where the adhesions were broken up between spleen and lateral abdominal wall, it became necessary to leave in two abdominal packs in order to control the oozing. The pulse rose from 50 to 140. Epinephrin was given while the patient was on the table, and continued after he was removed to his bed. Camphorated oil and strychnin were also given.

The patient had marked cyanosis for ten hours after operation, and oxygen was given continuously during this time. The foot of the bed was elevated and other measures for shock used. His convalescense was uneventful except for two elevations of temperature due to formation of stitch abscesses.

The spleen weighed 56 ounces. The report of Dr. J. S. McLester on the pathologic findings was as follows:

"The organ is firmer than normal, cuts very hard, is normal in color and has a greatly thickened capsule. In the interior of the organ is a cavity about the size of a hen's egg. Smears made from the contents of this cavity show softened splenic pulp and pus. Cultures made from this gave the typhoid bacillus in pure culture.

"Microscopic sections made from the organ show great increase in the size and number of the fibrous trabeculae. The fibrous framework seems to be enormously hypertrophied. The parenchyma cells are increased in size and number, and the glomeruli can be distinguished only with difficulty. Irregularly defined patches of pigmentation are seen. There seems to be some swelling and proliferation of the endothelial cells of the cavernous veins.

"Diagnosis: Chronic interstitial splenitis."

The blood picture of this case is interesting (Table 2).

TABLE 2.—EXAMINATION OF BLOOD IN CASE 4 BEFORE OPERATION

Aug. 23, 1909:		
White blood count	1,700	
Red blood count	2,400,000	
Hemoglobin	50	per cent.
Aug. 26, 1909:		
White blood count	1,800	
Red blood count	2,400,000	
Hemoglobin	45	per cent.
Blood pressure	115	
Malaria	Negative	
Widal	Negative	

Unfortunately the record of differential count before operation was lost; therefore it cannot be given accurately and is omitted from this report.

TABLE 3.—EXAMINATION OF BLOOD IN CASE 4 AFTER OPERATION

Aug. 28, 1909:		
White blood count	1,700	
Red blood count	2,850,000	
Hemoglobin	60	per cent.
Polymorphonuclears	64	per cent.
Large mononuclears	7	per cent.
Small mononuclears	12	per cent.
Eosinophils	17	per cent.
Blood pressure	95	
Sept. 1, 1909:		
White blood count	25,800	
Red blood count	2,940,000	
Hemoglobin	70	per cent.
Polymorphonuclears	68	per cent.
Large mononuclears	11.5	per cent.
Small mononuclears	6.5	per cent.
Eosinophils	14	per cent.
Blood pressure	120	
Sept. 3, 1909:		
White blood count	12,000	
Red blood count	4,000,000	
Hemoglobin	70	per cent.
Polymorphonuclears	88	per cent.
Large mononuclears	4	per cent.
Small mononuclears	4.5	per cent.
Eosinophils	3.5	per cent.
Blood pressure	115	
Sept. 11, 1909:		
White blood count	14,000	
Red blood count	4,200,000	
Hemoglobin	75	per cent.
Polymorphonuclears	72	per cent.
Large mononuclears	5	per cent.
Small mononuclears	20	per cent.
Eosinophils	3	per cent.
Sept. 15, 1909:		
White blood count	17,500	
Red blood count	2,240,000	
Hemoglobin	75	per cent.
Polymorphonuclears	71	per cent.
Large mononuclears	7	per cent.
Small mononuclears	18	per cent.
Eosinophils	4	per cent.
Sept. 30, 1909:		
White blood count	14,000	
Red blood count	4,520,000	
Small mononuclears	14	per cent.
Large mononuclears	9	per cent.
Polymorphonuclears	74.5	per cent.
Eosinophils	2.5	per cent.
Hemoglobin	85	per cent.
Oct. 10, 1909:		
White blood count	8,000	
Red blood count	5,000,000	
Hemoglobin	90	per cent.

April 15, 1910, about eight months after operation, the patient was in perfect health, had gained 53 pounds in weight and was at work as a day laborer.

In March, 1911, the patient returned for operation for hernia which had occurred through the drainage track. The hernia was repaired and the patient made a nice recovery, leaving the infirmary on the fourteenth day.

In April, 1914, the patient was still engaged in hard labor, and was perfectly well.

1127 South Twelfth Street.

LEAD NEURITIS FROM COSMETICS

WITH REPORT OF TWO CASES

L. R. SANTE, M.D.
ST. LOUIS

It has long been known that lead salts in face powder could cause lead poisoning, and indeed, as early as 1881, Holland,[1] in the report of a case to the Kentucky Board of Health, says that "Flake White (lead carbonate) as a cosmetic has caused every form of chronic lead poisoning." Although this seems to be well known, the relative infrequency with which it is diagnosed leads one to believe that it must be often overlooked. We all have seen cases of gastrointestinal disturbance of obscure origin which subsided without any treatment whatever; likewise, jaundice with crampy abdominal pain, where the "gallstone attack" subsided in an unaccountably short time and no gallstones were ever passed. Is it not possible, therefore, that this condition is not so rare as it may seem, but owes its rarity to failure in diagnosis?

It is with this in mind, that I wish to call attention to the following two cases:

CASE 1.—E. F., an unmarried white woman, aged 21, with a negative family history, had had the usual diseases of childhood; typhoid and pleurisy in later life. Had no bad habits and had never used liquor or alcoholic drinks in her life.

Present Trouble.—Up to four years ago patient had always been in perfect health. At this time she was working in a down-town business office, when she was suddenly seized by violent abdominal crampy pains which completely incapacitated her for work. The attack was precipitated by ingestion of "very green" apples so that the true cause was obscured. For three weeks she was confined to bed with pain of griping nature in the pit of her stomach, succeeded by severe cramps in both big toes, which finally extended to calf and thigh muscles. After this attack had subsided, she resumed her work, but one week later had another similar attack. At this time she became intensely jaundiced, with pain localized in the right hypochondriac region. She was sent to the hospital for gallstone operation but refused at the last minute. No gallstones were ever passed, and she left the hospital in about three weeks.

1. Holland, James W.: Legal Medicine, Peterson and Haines, ii, 384.

From this time on she had periods of confinement and convalescence lasting from three weeks to three months. Twice she was proposed for gallstone operation, once for appendicitis, and once for exploratory laparotomy.

She first noticed pain and tingling in extremities and loss of power in hands and wrists one year after the first attack. These pains and weakness grew worse with each succeeding attack until the fingers were so retracted into the palm as to make extension entirely impossible. She finally became so bad that she could neither walk nor care for herself in any way and was admitted to the hospital May 20, 1914.

Physical Examination.—Patient is well developed but rather poorly nourished and extremely anemic. She is confined to bed and is hyperesthetic; evidences much pain on even the slightest pressure over extremities. Special sense organs negative. Blue "lead line" over three teeth very pronounced. Heart, lungs and abdomen negative. The upper extremities show marked atrophy of the muscles, especially in forearms and hands. Extension of hands at wrists entirely impossible. Grip of both hands good but only when extension is assisted. Pain on pressure over nerve trunks. Elbow and wrist jerks gone. Reaction of degeneration present. The lower extremities show no paralysis and power is fairly well preserved but there is considerable atrophy of the thigh muscles. Pain on pressure over nerve trunks, but not so marked as in arms. Knee jerks and ankle jerks present and active on both sides. No abnormal toe reflexes.

Diagnosis.—At this late stage diagnosis of peripheral neuritis from lead poisoning was evident. The patient was questioned closely regarding hair dye, filled teeth and even as to local conditions such as lead smelters in vicinity, water supply, etc. Finally she admitted that for ten years she had been using "Flake White" (lead carbonate) as a face powder. This was mixed with glycerin and applied so as to make a smooth velvety coating over the face. No other source of lead could be found. Stipple cells were found in the blood in great numbers and her anemia was so profound that the average red count was 2,750,000. Urine showed a small amount of albumin and casts, and the reaction of degeneration was present in muscles of both forearms and hands.

Treatment.—Practically the only treatment instituted was the withdrawal of "Flake White" as face powder and use of massage to the affected muscles. In seven days all stipple cells disappeared from the blood, and in six months the patient had gained 30 pounds; red blood count was 4,000,000, and the wrist drop had entirely disappeared, the only permanent injury being that there was inability to abduct both thumbs, and albumin and casts continued in the urine.

CASE 2.—Mrs. J. S., white, aged 50. The family history was negative. The patient had had the usual diseases of childhood but was always fairly healthy in adult life, never had rheumatism or any rheumatic tendency. Never used alcoholic drinks. Always was accustomed to "making up" and used all sorts of "beautifiers." Had used "Flake White" face powder for some ten years. Her average weight up to the present was about 160 pounds.

Present Trouble.—When first seen in January, 1907, patient had had for three years numerous attacks of abdominal pain, with cramp-like pains in muscles, and at times was jaundiced. She was operated on for gallstones and several stones were removed, but in spite of this she showed no decided improvement and the attacks of colicky pain continued. Eleven months later she developed extreme sensitiveness on pressure over nerve trunks of extremities, and loss of power in forearms and hands.

Physical Examination.—This showed an adult woman in a bad state of nutrition; musculature poor and patient very anemic, slightly jaundiced and totally confined to bed. Her weight at this time was 93 pounds. Special sense organs were negative. Blue "lead line" was present on both upper and lower gums, lungs were negative but the heart showed an ill-defined murmur along left border at right of sternum, thought to be hemic. The abdomen showed nothing of special interest.

The upper extremities showed extreme atrophy of forearm muscles and a typical wrist drop; pain on pressure over nerve trunks and a hyperesthesia. Wrist and elbow jerks were absent. The lower extremities showed atrophy and pain on pressure but little or no paralysis. Knee and ankle jerks were still preserved and there were no abnormal toe reflexes.

Diagnosis.—The diagnosis of a peripheral neuritis from chronic lead poisoning was made on the presence of the lead line, wrist drop, pain on pressure over nerve trunks, colicky pains and anemia. Patient was questioned as to water supply, newly painted rooms, etc., but no source of poisoning could be found other than the Flake White she had used as face powder for ten years.

Treatment.—"Flake White" was withheld as a face powder and the magnesium sulphate, potassium iodid and strychnin treatment was instituted. In a period of seven months she gained nearly 100 pounds in weight, some 33 pounds more than her average weight. Her anemia grew less pronounced and she recovered completely from her wrist drop.

One year later patient was again seen, and this time for a "cold." Her true condition was a mild hypostatic congestion of the lungs, edema of extremities and shortness of breath. The heart was enlarged, there was a systolic murmur at the apex and an aortic systolic blow. She responded to digitalis and remained perfectly well for four years. At this time she again began using some sort of a French "face salve" (the identity of which has been lost) and developed again cramp-like pains in the legs. On discontinuing the use of the salve recovery was prompt. It was followed shortly, however, by a severe break in compensation which resulted in her death six months later from acute cardiac dilatation. The urine at all times was negative.

These two cases are of interest since they show the ill and even fatal effect intoxications of such an obscure nature may have. Indeed, one must consider that "out of the thousands of girls who use it" (as one of the patients expressed it) there must be more untoward effects which are not such evident causes of lead poisoning and are consequently overlooked. It may explain some instances of obscure conditions for which we find no cause. Patient 1, before her condition became quite evident, had had seventeen different diagnoses and been proposed for operation four times. It seems altogether wrong that a preparation which can produce such awful results should be sold to the laity at all, but to be dispensed without a poison label seems criminal. One patient asserted that in the ten years she had been buying it, only once did it bear a poison label, and the sample she gave me for examination was not so marked.

The report of Dr. G. Wilse Robinson[2] presents two similar cases with more happy results, but which nevertheless show the possibility of subjecting patients to unnecessary operation, and prolonging invalidism by failure to recognize the existing intoxication.

3545 McKean Avenue.

2. Robinson, G. Wilse: Lead Poisoning from the Use of Cosmetics, THE JOURNAL A. M. A., March 6, 1914, p. 814.

Infant Mortality in New York State.—The report of the state health commissioner, Dr. Hermann M. Biggs, shows that for the year 1914, the first year of the working of the new public health law, the infant death rate dropped from 137 per 1,000 births to 112 per 1,000. This means an actual saving of over 1,400 infants' lives. The educational campaign by which this was effected cost the state $14,500. Forty-five cities were visited and 150 popular health lectures given. Leaflets and pamphlets to the number of 75,000 were distributed. The total death rate for New York City for 1914 was 14.0 per 1,000 population, while for the entire state, including the Greater City, it was 14.6. The birth rate for the entire state was 23.7 per 1,000 population.

CLINICAL OBSERVATIONS ON THE CONTRACTILITY OF THE HEART

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That after exercise the normal heart occupies a diminished area has long been known (Herschfelder). The use of this fact in the estimation of pathologic heart muscle values is of the greatest importance and has been strangely neglected. Guthrie[1] has shown the clinical value of this property of the heart muscle. He measures the cardiac condition by the duration of dilatation of the auricles after coughing, until the heart returns to normal boundaries by virtue of the basic property of all heart muscle, that is, contractility. It should be recognized, however, that both tonicity and contractility are intermingled and inseparably concerned in such tests of cardiac soundness.

The method with which the present paper deals is contrary to the generally accepted dogma that the heart dilates after exercise, especially in pathologic conditions. But on the contrary, after *moderate* exercise there is nearly always a reduction in size, sometimes marked, sometimes very slight, and on occasions not at all, which can be made to disclose whether we are dealing with "new rubber or old, worn out and rotten rubber."

After exercising by alternately raising and lowering the arms until the patient is only *moderately* exhausted, say from thirty to forty times, not only is the pulse rate taken (as is commonly done), but also the transverse diameter and the heart tones are compared, before and after. If too greatly exercised, the heart may show a dilatation, instead of a contraction.

I have found this especially valuable in differentiating between organic and functional disorders, a distinct "murmur" or combination of bruits often being replaced by the normal or nearly normal heart tones, after exercise, as the following case shows:

CASE 1.—A boy, aged 11, came to the office, December 12, with marked albumin in the urine. The heart boundaries extended transversely one-quarter inch to the right border of the sternum to one-half inch to the left of the nipple line. The heart tones were a loud systolic bruit at the apex and a clear presystolic at the mitral and tricuspid areas. The arterial pulse was comparatively full, all through systole and diastole.

On exercise the heart contracted to the normal boundaries and *the sounds became clear and normal* (except for accentuation of the second aortic).

After rest in bed with restricted diet, the patient showed, December 14, two days later, a urine free from albumin and a heart almost normal.

Here the prognostic value of this sign is self-evident. The following case shows a pretty contrast:

CASE 2.—A boy, aged 10, was seen at home, January 31. He had had a bad productive cough for two weeks. There was a mucopurulent, tenacious sputum. The tonsils had been removed two years previously. The patient had alveolar abscesses. He had been in a hospital two years previously for some chest trouble. He was now gaining weight; the appetite was good; the bowels were regular; sleep was good; the urine was negative, with no sugar or albumin.

Examination of the teeth revealed pyorrhea. The throat was normal. The cervical glands were palpable. Reflexes were normal. Lungs: The left upper lobe showed organic change (dulness, etc.), but von Pirquet and sputum proved negative. Blood pressure was 80 to 85. Heart: The boundaries extended one-half inch beyond the normal on both right and left borders. An undulating wave was seen over the cardiac area. There were no murmurs. There was slight bruit after exercise. *However, after exercise, there was no appreciable reduction in the size of the heart.*

February 5 the cough was much better. The blood pressure was 105. The heart boundaries showed only a slight reduction; there was a slight systolic bruit at apex.

Here was a heart at least seriously, perhaps permanently damaged which on exercise displayed only a small reduction in area.

The foregoing are typical selections from a number of clinical cases.

CONCLUSIONS

1. The contractility of the heart muscle varies within wide limits, depending on the pathologic process.

2. This can be fairly well estimated clinically, and is a valuable differential and prognostic sign. The findings on auscultation and percussion vary after exercise.

3. Heart muscle may react in three ways:

(*a*) In functional and early lesions, the heart boundaries may on exercise return immediately to normal, bruits disappear and normal tones at once replace them.

(*b*) In moderately severe cardiac (and particularly cardiorenal) cases, the boundaries may return to normal, not immediately, but after rest in bed. (The heart may be enlarged and yet retain elasticity.) Should a heart respond at once, even moderately, we may expect at least better response after rest in bed.

(*c*) The heart remains permanently enlarged and inelastic, not only after the exercise test, but even on prolonged rest in bed.

3401 Douglas Boulevard.

1. Guthrie, J. B.: Cough-Dilatation Time a Measure of Heart Function, THE JOURNAL A. M. A., Jan. 3, 1914, p. 30.

ANGIOMA RACEMOSA OF THE PIA

WITH EPILEPTOID CONVULSIONS OF THE JACKSONIAN TYPE

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In the light of the information obtained at operation and necropsy, this case possesses unusual interest.

History.—Man, aged 30, married, clerk, with no history of any familial or hereditary taint of any kind, had always been in good health up to the beginning of his present trouble. Early in 1906, he first noted a spasmodic movement of his right arm that involved only the shoulder and upper arm. After the first attack, there were recurrences every few months which would last but a few moments and then entirely disappear. The slight spasm in the arm and shoulder was the only symptom. Up to Sept. 4, 1908, there was no disturbance of sensation of any kind, or any interference with consciousness during any of the attacks. On that date, following the usual tremor, he had his first general convulsion with unconsciousness. He did not have a second grand mal attack until October, 1909. In 1910 he had three severe attacks, in June, July and October, the last one keeping him in bed three days. In 1911, he began the use of amyl nitrite and carried the pearls with him. For some time these were able to abort or lessen his attacks. During the last year and a half the attacks had come with greater frequency and force, so that in the last month they had come almost daily.

Headache and vomiting had not been symptoms up to July 6, 1914 (two weeks before). Eight days before he had a

prolonged spell of vomiting and since then constant and intense headache. At the beginning of every grand mal attack he had a sensation as though there was a constriction about the right wrist that had severed the hand, and as though he could feel the blood running up his arm.

Every attack began with a rhythmic abduction of the right arm, together with some flexion at the elbow. These movements were slow at first, but became rapidly quicker and stronger, until they merged into a general convulsion. The preliminary twitchings constituted the only prodromal symptoms, as there were no visual, aural or epigastric sensations to usher in the attacks. There had been no complaint of any gastro-intestinal disturbances, and his appetite was good. He had noticed that his right arm and leg tired easily, and after a long walk he would drag the leg.

Examination.—There had been no gross mental defect; but, according to his wife, his personality had changed greatly; for instance, he had become greatly dependent on her when any decision was required or problem was to be considered. He had lost his snap and vim. At times, he became childishly irritable and querulous. Otherwise, there had been no symptoms of mental disturbance.

Station with eyes closed was slightly unsteady, with a tendency to sway to the left side (this was not very pronounced). His gait was not abnormal in any way. His speech had never been interfered with, and there was no involvement of any area supplied by the cranial nerves. Sensation for touch, pain and muscular sense had not been disturbed anywhere.

The reflexes did not give much information, except that the knee jerk and Achilles jerk were more pronounced on the right side than on the left. The biceps jerks were equal and there was no Babinski on either side. The abdominal and cremasteric reflexes were present on both sides.

When he stooped over, he experienced pain in the head; this had been more pronounced of late, and interfered with such postural movements as untying and removing his shoes.

The result of the examination of the eyes (Dr. Mansur) proved to be very interesting. The pupils were equal and reacted to light and in accommodation. Both fundi were normal, there being no papilledema or optic neuritis. There was no fault of vision in either eye.

The fields for form and color were very much contracted on both sides, but the color fields on the right side were more contracted than those on the left. In addition to this, the blue and red fields interlaced on the right side and were inside the green, whereas on the left side, the red was innermost and the blue the outermost.

Examination of the spinal fluid (Dr. Brem) gave a negative Wassermann and a one plus positive butyric acid test. The cell count was 32 mononuclears for 1 c.c. The cerebrospinal fluid was under a pressure of 165 mm.

The diagnosis was cortical irritation on the left side of the cerebrum, small in area and probably soft in texture, and situated at the center for the shoulder and upper arm. Considering the length of time since the first signs of cortical irritation began (eight years) and the absence of papilledema, pupillary inequality, headache, vomiting and other distressing symptoms of brain tumor, it seemed rational to believe that the cause of irritation was not a large, hard tumor, especially as the focus of cortical irritation had remained in the center for the upper arm and had not invaded other areas. The moderate intraspinal pressure seemed to add weight to this idea. No diagnosis was made as to the exact nature of the growth.

Operation.—Inasmuch as his convulsive seizures were becoming so frequent as totally to incapacitate him for his work, and because of the beginning symptoms of headache, vomiting and mental incapacity, surgical interference was advised and carried out by Drs. E. C. Moore and Van Kaathoven.

An opening was made over the arm center in the left side of the skull. Directly in the middle of the field the dura was seen to bulge in an irregularly rounded area having a diameter of 3 cm. When the dura was opened, two loops of engorged and tortuous blood vessels sprang up from their former position. They did not pulsate and their color looked redder than their fellows. They seemed to emerge from the cortex at one point and disappear into it at the distance of 1 cm.

The two loops were nearly 3 cm. apart, and between them the blood vessels were a darker blue, engorged and widened, but did not take on the almost erectile appearance of the loops. The pia was opaque and bluish throughout the affected area. There was no hemorrhage from any of these vessels, and the whole field was plain and clear. The appearance of the field was very similar to that of a case described by Fedor Krause[1].

Following Krause, the offending vessels were ligated and excised. There was no tumor mass, as such, and the only sources of irritation found were the two loops described and evidences of an old pial inflammation.

A curious circumstance, in the light of the operation and post-mortem findings, was the absence in the history of any data that would lead one to suspect inflammatory areas in the meninges.

The operation did not last long, and hemorrhage during it was not excessive, but the patient did not survive it quite two days.

Necropsy.—This revealed some most unexpected findings. There were numbers of old inflammatory areas in various places, as evidenced by adhesions between dura and pia.

At the apex of the left cerebral hemisphere, and seeming to impinge on the motor cortical center for the foot was a discolored area that felt more dense than the surrounding brain. Section revealed what looked like a hemorrhagic infarct about the size of an English walnut. This had the appearance of an embedded venous angioma. It was a mass composed of enlarged and engorged blood vessels which were filled with old blood. There was no capsule and no definite line of demarcation between it and the surrounding brain. This, and the areas of inflammation, were unexpected, as the history of the case gave no evidence of any symptom or physical signs which would lead one to suspect them.

The cortical area nearest to the hemorrhagic mass was likewise nearest to the cortical motor centers for the right foot. The body of the mass was close to the mesial surface of the left hemisphere and did not seem to impinge on the arm center. There had never been any spasm of the right foot or leg, except when the convulsions became general. In the light of necropsy findings, it is considered good reasoning to impute some of the general nervous imbalance to the presence of this apparently silent mass. But the fact remains that none of the focal symptoms seemed to be caused by either this hemorrhagic mass or the areas of old inflammation.

All the focal symptoms were accounted for by the evident and satisfactory lesions found at the time of operation over the cortical motor centers for the right arm. It is an interesting speculation as to what symptoms, if any, would have remained in the event of the patient's recovery from the operation, and, also, what cause would have been considered in the event of a continuation of old symptoms, or the appearance of new ones. The necropsy showed a perfect result in the surgical field of operation, as far as this could be judged under the circumstances. There were no other abnormalities found than those noted above.

The lesson of this necropsy, as of so many necropsies, seems to be that we are not always able to diagnose plural and more or less complicated or combined etiologic factors in apparently simple cases. In passing, it might be added that in many cases *sui generis* such inability is pardonable and proper.

1219 Brockman Building.

1. Krause, Fedor: Surgery of the Brain and Spinal Cord, i, 87-88, and Plate VIII.

INFANTILE HEMIPLEGIA

A CASE WITH UNUSUAL ONSET AND OBSCURE ETIOLOGY

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SAN FRANCISCO

Cases of hemiplegia in young infants and children following traumatism at birth or later, or following convulsive attacks from any cause, are frequent in the literature. The following case, however, appears unusual because of the absence of known cause and also by reason of the gradual onset of the hemiplegia with intermittency of the initial symptoms, because of which brain tumor and tuberculoma were considered as causative lesions.

History.—The patient, a male infant of 19 months, was brought to me Dec. 1, 1914, because of paralysis of right side. Both parents were intelligent. Insanity, syphilis and tuberculosis were denied. The maternal grandfather had been alcoholic. The mother was alcoholic. The child was the first born, was delivered without any difficulty, and appeared quite normal at birth. A few days after birth a petechial eruption was noticed on trunk and limbs. This eruption subsided in a day or two. The child was nursed at the breast for four months. Then cow's milk, half strength, was given. This disagreed at first, but later the child digested it well. There had been no infectious diseases. At one time recently the child bled rather profusely from a very slight cut. Otherwise he had been entirely well. The first tooth appeared at 7 months without trouble.

Present Illness.—While cutting a tooth, Aug. 24, 1914, the child was found to have a partial paralysis of the right side of mouth, right arm and leg. This occurred or was first noticed on the child's awaking in the morning after a quiet night without any convulsion being noticed. The following day the paralysis disappeared almost entirely, the only residual of it being a tendency to fall more easily than formerly.

September 13, three weeks after the initial symptoms, there was a recurrence of paralysis, first in the right arm and hand; there were clonic movements on right side, a temperature of 99.5 and loss of appetite with vomiting once. No sensory disturbance was noted. After a week, without any further symptoms, the paralysis had disappeared; meanwhile the child had cut some teeth.

October 24, almost six weeks after the second attack, a return of weakness was noticed on the right side. This again disappeared in two or three days.

November 14, the child had an attack of diarrhea. This lasted several days. November 25, the patient seemed to have difficulty in seeing his toys and frequently turned his head to the right as if to see better; there was also some difficulty in swallowing. On this day the paralysis on the right side returned, with twitching of the facial muscles of the right side.

Examination.—Dec. 1, 1914. This revealed a well-nourished child of normal development. The fontanel was closed. There was a spastic paralysis of the right arm and hand and the right leg and foot; the arm was much more spastic than the leg. There was a weakness of the lower facial muscles on the right, especially marked when the child laughed, but not evident when he cried. The Babinski reflex was positive, and the patellar tendon reflex was increased on the right. There was no sensory disorder or ataxia. The pupils were unequal; the right was larger; both reacted well to light. The action of the external ocular muscles was normal. The examination of the fundi of the eyes showed pallor of the optic disks, the left more so. These findings were interpreted by the ophthalmologist as evidence of previous choked disk.

The urine showed a great excess of indican and uric acid, but was otherwise normal. The blood showed no abnormality, the Wassermann also being negative. The temperature was 98.6 and pulse 120, respiration 28. Spinal puncture was made but was not successful. The child was fretful, and had green stools of a pronounced odor.

Subsequent History.—On the morning of December 2, after a quiet night, the patient had a series of tonic convulsions recurring about every five minutes between 8:30 and 9:30 a. m., and involving both sides of the body. Thereafter the focal symptoms remained as before the convulsions. The general symptoms after the convulsive seizure consisted only in a rise of temperature to 100.5, pulse 158, respiration 38. These symptoms subsided the next day.

After colonic irrigation and castor oil with cereal diet for a week, the child's restlessness was much less. There was no return of convulsions and no apparent blindness. At no time was the child in stupor and at all times appeared very intelligent and observant. After two weeks without additional symptoms, the patient was discharged to the care of the parents. At this time the spasticity of the leg was very slight; there was a little voluntary motion in both directions (flexion and extension) at the ankle joint; the arm was more spastic but less so than two weeks previously, and there was considerable voluntary motion at shoulder and elbow, the fingers being more involved in the spastic paralysis than any other part. The paralysis of the face was still evident when the child smiled. A von Pirquet test before discharge proved negative.

COMMENT

It seems most probable that the lesion causing the right hemiplegia of the upper neuron type was a hemorrhage from the lenticulostriate artery into the middle portion of the left internal capsule and lenticula, with subsequent clot formations causing pressure of varying degree and finally destruction of some of the fibers; possibly the hemorrhage was of a recurrent type, recurring at each attack of paralysis. That the clot by pressure on the optic tracts or interference with the circulation in the optic nerves was the cause of the findings in the optic fundi is a reasonable supposition.

Since no convulsion was observed prior to the hemorrhage, it is justifiable to assume that the child had a hemorrhagic diathesis which became aggravated by the digestive and nervous disturbance accompanying the cutting of teeth. An acute encephalitis with thrombotic or hemorrhagic lesions following it might explain the case, but the presumption is against this because of the apparently restricted area of brain tissue involved.

Tumor or tuberculoma are excluded by the subsequent course of the disorder.

Physicians Building.

OVARIAN CARCINOMA IN A CHILD AGED ELEVEN

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Carcinoma of the ovary occurring at the early age of 11 is extremely unusual. The following brief history is of such a case. No effort has been made to include either a summary of the cancer problem in general or of the literature pertaining to the case in particular.

The patient, Gladys C., aged 11, a schoolgirl, had a negative family history. Her mother stated that she had always been an unusually healthy, vivacious child; had suffered from the ordinary diseases of childhood but had never been seriously ill.

April 3, 1910, she was brought to St. Joseph's Hospital by Dr. J. F. Taylor, who stated that he had first seen the child the day before, when she was complaining of severe abdominal pain not localized. This pain had been present for three days, before which time she had been feeling perfectly well. There was no menstrual history. Examination showed a well-nourished girl with rosy cheeks and unusually well developed for

her age. Examination everywhere was negative with the exception of the abdomen, where the palpating hand at once encountered a large movable tumor, which rose from the pelvis to the level of the umbilicus. This tumor occupied the median line, but could be easily displaced to either side. It was quite tender on deep pressure and fluctuation could not be elicited. When the tumor was displaced to the left, marked tenderness was found in the right inguinal region over the appendix, with rigidity of the right rectus.

The diagnosis was of tumor of the left ovary, with subacute appendicitis.

Operation was performed April 4, 1910. Through a median incision, the tumor was at once exposed. It was found to consist of the left ovary, which together with the tube was easily removed, as it was at no place adherent. The appendix was found somewhat distended and acutely inflamed, and was removed. There was no free fluid within the peritoneal cavity and the peritoneum everywhere was glossy and apparently normal. No lymphatic involvement or evidence of disease elsewhere within the cavity could be discovered.

Convalescence following the operation was entirely uneventful. From April until the following February, the child seemed well; had no pain; gained in weight and stature and was noted for her happy, fun-loving disposition. Early in February she began to complain of vague abdominal pain, which was not at all constant. Soon her appetite which had been as her mother said, "enormous," began to fail, until by the first of March she could scarcely be induced to take food. Dr. Taylor saw her about this time, but could, on physical examination, detect nothing pointing toward recurrence. She continued to lose weight and strength and became very irritable. There was no constipation or vomiting. About April 1 some abdominal distention was noticed, which steadily increased. The pain by this time was becoming more constant and severe.

April 19, she was again brought to the hospital. Examination revealed marked emaciation, an anxious, drawn, facial expression, and marked abdominal distention, evidently due to a large amount of free fluid within the cavity. In short, the familiar picture of recurring malignant disease within the peritoneal cavity.

Operation was again performed April 20, 1911. When the abdomen was opened through a median incision, a large amount of straw-colored fluid escaped. Scattered throughout the cavity were nodules involving parietal peritoneum, visceral peritoneum, intestine and mesentery. These nodules were hard and irregular in outline. The ileum was adherent in many places and at each point of adhesion was a large nodular mass. The mesentery was filled with large nodular growths. The upper abdomen was involved as well, nodules being present in the liver and stomach. As relief was out of the question, a large mesenteric nodule was removed for examination and the abdomen closed.

The child failed steadily following the second operation. The abdomen rapidly refilled with fluid, emaciation became more marked, pain required frequent administration of anodynes and death occurred thirty-six days following the second operation. No necropsy was permitted.

The tumor was given to Drs. F. S. Johnson and W. G. Rowley of this city, who reported as follows:

"The specimen is a large cystic tumor weighing 3 pounds, 2 ounces. It is ovoid in shape and nodular in contour showing beneath the peritoneal surface many cysts varying in size from 2½ inches in diameter down to microscopic size. The contents of these cysts are not uniform, and vary from a thin mucin-like fluid to a thick heavy yellow content that has proved to be degenerated broken-down tissue. Attached to the tumor is a Fallopian tube very much elongated and overdeveloped for an eleven year old girl. Accompanying the large tumor is an appendix from same subject as the large tumor. There are irregular nodular masses of tissue projecting above the surface of the tumor and into the cyst cavities. Sections made of appendix show no disturbance in the epithelium or the connective-tissue stroma. A round-cell infiltration with dilatation of tissue spaces showing inflammation are the only departures from normal. Sections made of the Fallopian tube show no pathologic deviation from normal. Sections made from many portions of the large tumor show a connective-tissue stroma rich in blood vessels and supporting areas of hyaline cartilage, groups of glia cells, strands of smooth muscle fibers, tubules lined with stratified columnar cells, cyst-like spaces filled with mucin-like contents and areas showing mucoid degeneration. Sections from one of the node-like projections into cyst space, show the columnar epithelium lining the tubules to be breaking through basement membrane and invading neighboring connective tissue and blood vessel walls. In one field, an artery of considerable size is plugged with proliferating epithelial cells. Diapedesis of red blood cells and infiltration with round cells is a noticeable feature in almost all sections examined.

"Our diagnosis is: Teratoma in a state of carcinomatous degeneration."

The small nodule removed at the second operation was examined by Drs. Johnson and Rowley, who reported as follows:

"On April 21, 1911, a small tumor ½ inch in diameter was handed us for microscopical examination and diagnosis. It was soft, friable, bloody, looking much like a blood clot. Section showed it to consist of a stroma of connective tissue with a rich network of blood vessels and supporting groups of columnar epithelial cells. Some were simply nests of proliferating columnar cells, while in other fields quite regular looking glands lined with stratified columnar epithelium were noted. A most extensive diapedesis of red cells was everywhere to be seen. Diagnosis: Carcinoma secondary to ovarian tumor removed one year previous."

The one slide preserved from sections taken from the growth removed at the second operation has been examined by Dr. E. R. LeCount whose report follows:

"The tumor is malignant and most like the proliferating cyst adenomas of the ovary. It belongs to the carcinoma group and in these sections as in those from one or two similar growths (they are very rare in young girls), also in young girls, I have found some changes or appearances indicating some small, but close relationship to the so-called teratomatous growths."

The subsequent history of the case together with the gross appearance of the abdominal contents at the second operation, when a condition of typical general abdominal carcinosis was found, coupled with the report of Drs. Johnson and Rowley concerning the microscopic diagnosis of the tissue removed at that time, would seem to justify the diagnosis of teratoma or embryoma of the ovary undergoing carcinomatous degeneration.

Added to this is the fact that the metastases took place by way of the lymphatics and were most extensive in distribution. As a point of further interest it might be added that had the child not suffered an attack of acute appendicitis, the pain arising from which attracted the attention of her parents, this tumor would doubtless have much longer escaped detection.

Treatment of Hemorrhage by Blood Transfusion.—A baby, 16 months old, was admitted to Murray Hospital July 22, 1913. For a week black and blue spots had been appearing on its body. Ten hours before admission to the hospital it began bleeding from the nose, and the hemorrhage was uncontrollable even after packing the nose with cotton pledgets saturated with epinephrin chlorid. There was a constant oozing of a thin bloody fluid from the nasal mucosa, but no single point of bleeding was visible. In the mucous membrane of the mouth there were punctate and larger hemorrhages, the entire body was covered with hemorrhagic spots of various sizes, and the stools were black from the large proportion of old blood; the child was nearly exsanguinated. Ten c.c. of the father's blood was withdrawn from the basilic vein and injected into the buttock of the child. The hemorrhage ceased within half an hour and the child slept most of the following night. The hemorrhagic spots were slowly absorbed, the stools also gradually becoming normal. There has been no recurrence of the condition.

PETER POTTER, M.D., Butte, Mont.

New Instruments and Suggestions

1. A FOLDING PAPER DEMONSTRATING CASE FOR BACTERIAL CULTURES
2. A PAPER INSET ANIMAL NECROPSY TRAY

M. R. SMIRNOW, M.D., NEW HAVEN, CONN.

A bacteriologist frequently finds occasion to demonstrate cultures of micro-organisms, either to student classes within or near the laboratory or at meetings at some distance. In such circumstances it would be desirable to have not only some light and compact receptacle for such cultures, but also one in which the cultures could be shown to the best advantage.

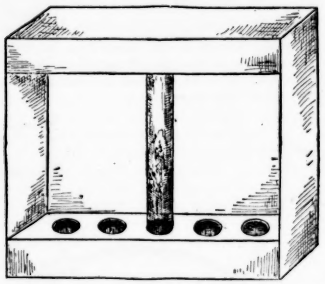

Fig. 1.—Folding paper demonstrating case for bacterial cultures.

It was for just such an occasion that, in looking about for a proper demonstrating case, I finally invented the form of folding paper display case shown in Figure 1.

This case is easily made by using a No. 160 white card paper. The design is mapped out, cut and creased, as indicated in Figure 2. The holes are punched out with a 5/8-inch die. The case is then folded, fastened and put away until it is to be used. When the cultures to be demonstrated are ready they are placed in proper order into the case, and any description desired may be written directly on the face of the case at both its upper and lower margins. All dimensions except the length are constant for any size display case desired, the length varying with the number of tubes the case is to hold, requiring 1¼ inches for each tube. The height of the case is 6¼ inches and will hold the regulation size culture tube, the cotton plugs of which are best cut down to the mouths of the tubes and sealed with paraffin.

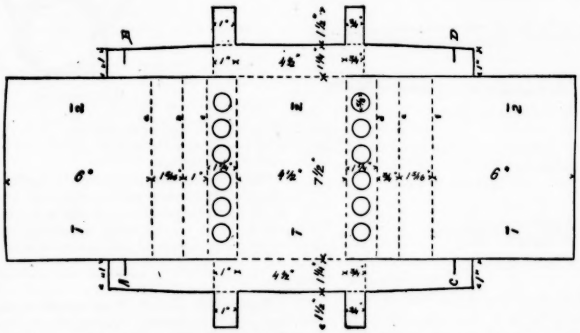

Fig. 2.—Plan of demonstrating case. A 160-pound white bristol cardboard is used. The design is mapped out according to the dimensions indicated. The cardboard is cut on all solid lines except slits marked *A, B, C* and *D*, also 1, 1, 1 and 2, 2, 2, which are to be done later. All dotted lines are creased with some blunt instrument, the cardboard being placed over soft wood. As many apertures as are desired are punched out, 1¼ inches for each being allowed. All creased lines are bent forward except *a, b, c, d, e* and *f*, which are to be bent backward, and are folded as in illustration. The flaps *A, B* and *C, D* should overlap; slits are cut in opposite direction, as indicated, so that they will properly lock. With a sharp instrument are cut small slits 1 and 2, which will go through three thicknesses of paper that make up the back of the case, and by which the whole is fastened with ordinary paper fasteners.

At several meetings where the demonstration of the cultural characteristics of bacteria was desired, I have used a number of these cases of various sizes with excellent success. The advantages of this paper demonstrating case are:

1. It is of light weight, is easily constructed, and is excellently suited to demonstrating purposes.
2. It takes up little room and may be conveyed any distance, packed in a hand bag or suit case.
3. The culture tubes are separated from one another and cannot be broken.

PAPER TRAY

This necropsy tray is intended as a convenient piece of apparatus for laboratories in which a considerable number of animal necropsies are conducted. It is designed especially with a view of permitting the least amount of handling of the animal. Its oiled paper inset affords no opportunity for the spread of blood or other fluids, and acts as a wrapping material for the remains that are to be destroyed.

The tray proper is constructed of a single piece of sheet galvanized tin and measures 20 by 9 by 1½ inches for rabbits and 9 by 6 by 1½ inches for guinea pigs. The corners of the tray should be finished off by making small flaps from the ends onto the sides, riveting them in place, and soldering the seams on the inside. A double leg holder made of flat spring brass about three quarters the length of one of the ends and five-eighths inch wide is riveted to one end. The brass is made rough on the inner surface to increase its gripping power. This end of the tray is made a full quarter inch lower than the other end or the sides of the tray in order to permit the side clamps to "ride" on the sides of the tray. The sides are somewhat lipped or flattened on their tops, measuring one-quarter inch in width. At the ends farthest from the leg holder is soldered a corrugated strip of galvanized tin, about 6 inches in length and one-quarter inch wide, fitting exactly over this lipped surface. These corrugations, together with a spring brass clamp, are to act as leg holders for the forelegs of the animal, automatically adjusting themselves to any size animal.

This clamp is constructed of spring brass. It is made in the manner illustrated and fits loosely over the lipped edge of the side of the tray. The square portion of the clamp must be heated to permit bending, as spring brass cracks and breaks instead of bending at acute angles. The end of the clamp is so constructed that it will allow free play in its move-

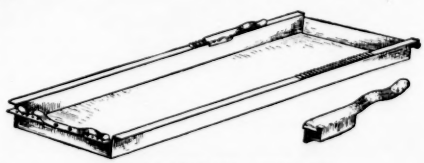

Fig. 3.—Paper inset animal necropsy tray.

ment over the corrugations except when there is some pressure underneath the curved portions of the clamp, at which time it should catch and hold firmly.

The paper inset is best made of No. 100 oiled paper, cut to size and folded to fit the tray. All its sides are folded 1½ inches from the edge of the paper, and the corners turned to one side or the other.

The tray is simple in construction, costs very little and can be used indefinitely, as there is nothing that requires special attention. The only things that might possibly need replacing are the brass clamps, which can be turned out by any laboratory technician. The paper insets can be folded by hand or can be supplied in quantities at little cost by some paper box manufacturer.

Though from a sanitary standpoint no special advantage can be claimed for this tray over the ordinary piece of board, newspaper and nails, always used in bacteriologic laboratories, yet the tray described acts as a much better piece of apparatus for purposes of demonstration, and adds to the general neatness in laboratory technic.

RETAINING CLAMP FOR A TWO-PIECE TRANSFUSION TUBE

BERTRAM M. BERNHEIM, M.D., BALTIMORE
Instructor in Clinical Surgery, Johns Hopkins University, Medical Department

Three years ago (THE JOURNAL, April 6, 1912, p. 1007) I devised an emergency two-piece transfusion tube which has fulfilled every prediction—so much so that I now use no

Fig. 1.—Two-piece tube.

other method of direct transfusion. But it is troublesome and a bit time-consuming to place the tie that retains the tubes in their respective vessels; and, in spite of the fact

Fig. 2.—Retaining clamp.

that the heaviest silk is always used for this purpose, some one usually contrives to break it just when speed is most desirable.

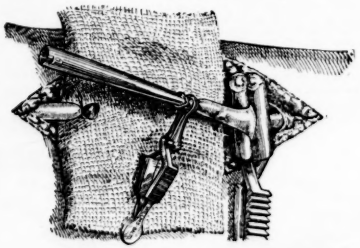

Fig. 3.—Retaining clamp in use.

To avoid this contingency, I have devised a retaining clamp for the tubes. Description is rendered unnecessary by the illustrations. It is sufficient to relate that one-half of the tube is inserted into the radial artery of the donor and clamped there; the other half is inserted into a vein of the recipient and also clamped; the two halves are then invaginated for about one-quarter inch, the retaining clamps acting as efficient handles. Repeated use of these clamps has demonstrated their practicability. Blood can now be transferred directly from one individual to another by this method without using a single tie and almost in less time than it takes to tell about it. Furthermore, no assistants are required.

2319 Linden Avenue.

A MOUTH SPECULUM

H. W. WOODRUFF, M.D., JOLIET, ILL.

The instrument shown in the illustration is designed to give better exposure of the field in operations on the throat or in the mouth. It is to be used in connection with the

Mouth speculum.

Whitehead or similar mouth gag. It is simply a selfretaining wire speculum with stop to prevent too great pressure when used on children.

Many tonsil operators have the angles of the mouth held away by an assistant with the finger or retractor. This instrument, when in position over the gag, obviates this necessity and helps to remove every obstruction in the line of vision without interfering in the least with other instrumentation.

Fluoroscope Switch Preservation of Specimens.—In looking over a recent catalog of a Roentgen-ray supply firm, I saw advertised a switch intended to control the fluoroscope tube from the main rheostat. The price is $20. I have accomplished exactly the same results at a cost of $3 by the following installation: The rheostat is tapped underneath the buttons at four points, to give 1, 2, 6 and 10 milliamperes in the tube. These points are connected by electric wires with the two two-way switches which are attached at some convenient point near the fluoroscope. The four wires leading from the rheostat to the switches may be passed through a rubber tube or wrapped up with tape. This is not essential, but looks neater. By throwing in one or the other of the switches, the tube in the fluoroscope will light up to the desired point.

PRESERVATION OF PATHOLOGIC SPECIMENS

I found that small specimens can be preserved in pure glycerin to which a small amount of formaldehyd is added (from 0.5 to 1 per cent.). An "interesting" appendix which I placed in glycerin two years ago is still in a condition of wonderful preservation, showing the areas of necrosis and the infection of the blood vessels. The fresh appearance of the tissue is remarkable.—ALBERT ROBIN, M.D., Wilmington, Del.

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 1499)

XVIII

DRUGS WHICH ACT MAINLY ON THE HEART

THE DIGITALIS GROUP

The digitalis group is one of the best defined in the materia medica because the cardiac actions of all its members are quite similar qualitatively, though they show wide differences quantitatively, and nearly all of the drugs of the group are used for their cardiac actions almost exclusively.

The characteristic action of these drugs on the heart is called the digitalis action, and all drugs exerting this action are called digitalis bodies, regardless of the source from which they are derived.

A drug is said to possess the digitalis action if it causes the frog's heart to come to a standstill with the ventricle in systole and the auricles in diastole, following a characteristic behavior. This usually includes a period of slowing of the heart-rate; a period of increased rate, and a period during which there are typical irregularities in the rate and force of contraction. The beat of the auricles and that of the ventricle usually show complete dissociation shortly before they stop. This digitalis action on the heart is interesting, for it exhibits all of the actions for which the drug is used therapeutically, and those of toxicologic importance.

Fatal doses of digitalis cause the intact mammalian heart to stop in diastole because it is incapable of beating after the coronary circulation is interrupted, but when the mammalian heart is perfused with a solution of a digitalis body it also stops with the ventricles in systole. This systolic standstill is an expression of the increased tonicity of the heart which is the foundation of the therapeutic use of the drug in a large proportion of cases.

Our knowledge of the drugs of this group has been extended greatly within the past few years with the result that their therapeutic uses and limitations have been determined far better than those of most drugs. Digitalis, however, cannot be used successfully without an understanding of its pharmacologic actions, and there are few drugs concerning which there have been a greater number of erroneous conceptions. With the advance in our knowledge of the drug it has become necessary to revise much of the teaching that was current but a decade ago; therefore the pharmacologic and therapeutic actions of the digitalis bodies will be discussed in somewhat greater detail than those of many other important drugs.[1]

The digitalis bodies have no important direct actions on the higher parts of the brain, though they have a slight tendency to induce somnolence when large doses have been administered.

They stimulate the vomiting center in the medulla, and nausea and vomiting are commonly observed when the therapeutic dose is exceeded slightly with any member of the group, and it is difficult or impossible to elicit the full therapeutic effect of some of them without causing nausea. These symptoms afford a guide to the limitations of therapeutic doses, and these and other signs will enable the physician to elicit the full therapeutic effects on the heart while avoiding the dangerous side actions in the majority of cases.

Digitalis bodies stimulate the vagus center and the vagus endings in the heart, but the latter effect is probably of minor importance. The vagus stimulation does not always suffice to cause pronounced slowing of the heart-rate, but there is a group of cases in which it occurs almost invariably. These will be discussed later. Excessive doses cause an increase in the rate, with various forms of irregularity.

The rate of the heart-beat is controlled normally by impulses which arise in a small mass of tissue, known as the sino-auricular node, or the pace-maker of the heart, which is situated in the region about the mouths of the great veins which empty into the auricle.

The impulses or stimuli for contraction which arise in the pace-maker pass down to the auricles, causing them to contract, and the impulses are then transmitted through the minute bundle of muscle fibers known as the auriculoventricular bundle to the ventricles, causing them to contract.

Digitalis depresses the conductivity of the auriculoventricular bundle, delaying or preventing the passage of impulses through it and causing what is known as heart-block. With moderate doses impulses are delayed, and a few of them may be prevented from passing; the block is then said to be partial. In such cases the interval between the beat of the auricles and that of the ventricles is increasingly prolonged with successive beats until one of the ventricular beats drops out, the auricles then beating three or four times to two or three beats of the ventricles. In such cases the ventricles may appear to be beating with almost perfect regularity, but careful observation will show a slight irregularity at least, and a difference between the number of the auricular and the ventricular beats.

With larger doses of digitalis there may be a complete block, so that impulses do not pass from the auricles to the ventricles, and the latter then take up an independent rhythm, usually much slower than that of the auricles.

Partial or complete heart-block may result from disease, or a small dose of digitalis may convert a partial into a complete block. This action of digitalis is exerted through the vagus, and it is interfered with by atropin.

Heart-block is beneficial in cases of auricular fibrillation, in which condition it relieves the ventricle of innumerable stimuli which cause it to beat irregularly and usually very rapidly, but it must be understood that digitalis has no perceptible influence on the fibrillating auricle, which continues to fibrillate independently of the improved circulation.

Auricular fibrillation is a condition which has only recently come to be recognized as of common occurrence in man, the condition being formerly diagnosed as myocarditis. The fibrillating auricle does not con-

* This is the eighteenth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

1. It may be remarked in passing that advances in our knowledge of digitalis have gone hand in hand with equal advances in our knowledge of the cardiac conditions for which the drug is useful, and physicians who are not familiar with the recent progress in the diagnosis and treatment of cardiac disease will find a little volume entitled "Clinical Disorders of the Heart," by Thomas Lewis, extremely valuable. The subject is discussed in a simple and easy manner which one can understand without being a specialist in cardiac diseases.

tract as a whole, but a fine tremor constantly involves the surface of the auricle, and instead of the rhythmic impulses which normally pass from the auricle to the ventricle, numerous impulses arise without any sort of order in the fibrillating auricle, and passing to the ventricle cause it to beat with extreme irregularity of rate and force, and usually very rapidly.

A heart which beats with abnormal rapidity does not contract adequately during systole, and the blood is dammed back into the veins, with the well-known evil consequences.

Digitalis causes the ventricle to beat more slowly, to dilate more completely in diastole, and to contract more forcibly and completely in systole, hence to empty itself more perfectly, discharging a larger amount of blood at each beat. It is easily understood that these changes result in a better circulation unless the slowing has been too great, and this improved circulation is the object of digitalis medication regardless of the symptoms of which the patient complains. There are few conditions in which digitalis is so dependable as in auricular fibrillation occurring in patients under 40 years of age.[2]

If the heart is slowed to an excessive degree the volume expelled in a unit of time may be less than before the digitalis was given, but with moderate slowing which usually results, the improvement in the circulation is pronounced. It is impossible to state in exact terms what constitutes excessive slowing, but a reduction of 50 per cent. in the rate may be beneficial when the rate has been extremely rapid.

During cardiac dilatation, acute or chronic, the heart dilates excessively during diastole and contracts very imperfectly during systole, and much of its energy is then lost through the regurgitation of the blood through the incompetent valves. In such cases digitalis does not cause increased dilatation during diastole, but its capacity for increasing the tonicity of the heart becomes more prominent, and its effects are more pronounced in increasing the systole, whereby the amount of blood expelled at each beat is greatly increased. It is said by some to be much more effective in acute than in chronic dilatation, but others report good results in both conditions.

Since the heart rests only during diastole, the slowing of the rate, which is largely due to prolonged diastole, permits of a greater opportunity for rest. The blood is squeezed out of the tissues of the heart during systole, and when this is rendered more complete, a larger volume of fresh blood will flow through the capillaries and the heart will be nourished more efficiently. The opportunity thus afforded for the improved nutrition of the heart probably explains in part the increased force of contraction after digitalis, this being supplemented by the better general circulation in which that of the coronaries participates.

The complete recovery of the heart requires some time and the full *effect* of digitalis may be induced, slowly, even though its maximum *direct action* may be elicited promptly.

The mechanism of this increased nutrition should be borne in mind, for it will serve to explain why a rise of blood-pressure is seldom injurious to the heart even when the heart was previously overtaxed, for with the improvement in its nutrition the slight additional energy required to force the blood out against the increased pressure will be more than compensated for by its increased capacity for contraction.

The effect of the digitalis bodies on blood-pressure has been the subject of a great deal of discussion. One difficulty which the investigation of this subject presents is that pharmacologists are unable to secure animals which suffer from cardiac diseases similar to those in which digitalis is used therapeutically, and we have seen that it tends to restore the heart-beat toward normal; hence the pharmacologic experiments have given conflicting results.

It is commonly stated that digitalis causes an increase in the blood-pressure, but it is true that it may produce the desired therapeutic effects while the blood-pressure rises or falls, dependent on whether it was previously too low or too high.

When the heart fails to supply enough blood to the central nervous system a greater or less degree of asphyxia with cyanosis results, and this causes constriction of the blood-vessels so that the increased blood-pressure may maintain a sufficient circulation in the central nervous system which must be supplied if life is to be maintained at all. Since the blood-supply elsewhere is insufficient, it is obvious that certain organs must suffer injury, one of these being the heart itself. When the heart begins to beat more efficiently the asphyxia is relieved, and the high blood-pressure may return to normal while the patient's condition improves.

When the vasomotor control of the pressure is impaired while the heart supplies an insufficient amount of blood, the blood-pressure is low, and such a condition must result in injury to some of the organs, especially the heart. When the heart-beat is improved in such cases by digitalis, the blood-pressure rises.

There is an extensive literature dealing with the constrictor action of the digitalis bodies on the vessels, especially concerning the capacity of certain members of the group to constrict the coronaries. This vascular action of the digitalis bodies is not very important, but it has given rise to so much misunderstanding that it deserves a word of explanation.

All digitalis bodies act directly on the blood-vessels with which they are brought in contact *in sufficient concentration*, causing constriction; hence, when organs are perfused with blood or Ringer's solution containing any digitalis body in sufficient amount, the vessels are constricted, digitoxin being very active, while some other members of the group, notably strophanthin, are much less active. It has been supposed that when these digitalis bodies are administered to patients they cause a similar vascular change, but this supposition is based on two erroneous conceptions. The first is that when digitalis is given in

2. It may not be amiss to refer briefly to the means of diagnosing this condition, which is said to occur in 60 per cent. of the patients who enter the general hospitals with evident signs of cardiac insufficiency. It occurs rarely in those under 17 years of age, and not often before the fortieth year without a history of rheumatism or chorea. With advancing years it becomes more frequent in the absence of such a history. The most characteristic symptom is an absolute irregularity of the rate and force of the ventricular beat, that is, not even regularly recurring groups of beats can be made out. When a patient more than 15 years of age has a ventricular rate above 120 beats per minute at the apex and an absolutely irregular heart, one may strongly suspect auricular fibrillation. The occurrence of such symptoms in one who presents a history of rheumatism or chorea points even more strongly to that condition, and when to these are added other symptoms of cardiac insufficiency the diagnosis can be made almost with certainty. If the rate is slow but absolutely irregular the diagnosis may be aided by letting the patient take gentle exercise which causes the ventricle to beat more rapidly; the irregularity increases if the auricles are fibrillating, but decreases if it arises from other causes. Many beats can be heard at the apex which cannot be felt at the wrist, and the number of these is an index of the insufficiency of the heart. Auricular fibrillation usually persists from the time of its appearance until the death of the patient, but it is only temporary in about 10 per cent. of the cases.

therapeutic doses, it enters the circulation in concentration comparable to that used in perfusion experiments, and the second is that the vasoconstrictor action persists for some time.

Digitalis has been shown to leave the blood-stream within a few minutes after its intravenous injection —and it acts on the vessels only while it is contained in the circulating blood; in the next place it is never present in the blood of patients in the concentration in which it is used in perfusion experiments. From this one may say with a reasonable degree of assurance that the digitalis bodies exert no *direct* vascular action of any importance, and that when they exert any such action it is only through the general improvement in the circulation.

The diuresis which follows the use of the digitalis bodies is sometimes explained as being due to the constriction of the vessels of the liver and certain other areas, and dilatation of the vessels of the kidney. The renal vessels are normal in cardiac disease; if digitalis acted on them then it would affect them in the same way in health, but digitalis does not act as a diuretic in healthy men. Further, if it were capable of causing dilatation of the renal vessels some increase in the secretion of urine would be seen even in those cases in which digitalis failed to improve the condition of the heart; but, as a matter of fact, diuresis does not occur when the drug fails to improve the heart-beat and the circulation.

There is no evidence whatever that digitalis has any direct action on the kidneys. The diuresis which it induces in patients suffering from dropsy due to the insufficient action of the heart is explained as follows:

When the heart fails to pump the blood from the veins into the arteries as rapidly as the veins supply it, certain organs begin to suffer, as previously stated, and water begins to pass from the circulating blood into the tissues in abnormal amounts; in other words, the patient becomes edematous. When digitalis causes an improvement in the action of the heart and in its capacity for removing the blood from the veins into the arteries, the water which previously tended to pass out into the tissues now begins to pass back into the veins, causing hydremia, and hydremia always causes diuresis if the kidneys are capable of secreting urine abundantly.

If the kidneys have suffered irreparably from the deficient circulation they may be incapable of secreting an additional amount of urine even though digitalis may cause some improvement in the heart-beat.[3]

The tardy appearance of the therapeutic effects of digitalis has long constituted one of the serious objections to its use. It has been taught that the delay is due to the slow action of digitalis after it comes in contact with the heart, but this is an erroneous view. Any delay in inducing the therapeutic actions of any of the members of the group in suitable cases must be attributed to the failure to secure the prompt absorption of an effective dose. The intravenous injection of a very large dose of any member of the group causes death by cardiac action within a few minutes, and sometimes within a few seconds, especially when digitoxin is used in excessive amounts, though digitoxin was formerly supposed to be the slowest to act of any of the digitalis bodies in common use. The ultimate effects of digitalis action on the heart must be distinguished from the direct action itself.

Digitalis is absorbed within the course of a few hours fairly completely, a small part being probably destroyed in the gastric juice; strophanthus, or strophanthin, is absorbed very irregularly after the oral administration. Five times as much strophanthus as would be required by intravenous injection to cause death may be given by the mouth to a cat or dog without causing any perceptible symptoms as a rule, but occasionally rapid absorption and death will occur from such doses. A patient received by the mouth six doses of strophanthus in twenty-four hours without showing any effect that could be detected by the most careful observation with frequent pulse-tracings, but the seventh dose of the same amount as the previous ones was followed promptly by alarming symptoms of toxic action which continued for several days before improvement began.

These experiences both in the laboratory and in the hospital show that strophanthus and strophanthin are wholly unsuited for oral administration. Digitalis and its galenical preparations are the most absorbable of the digitalis bodies known.

CUMULATION, SO CALLED

When any digitalis body is given in repeated doses, toxic symptoms may appear rather suddenly, and these have been commonly attributed to cumulative action, so called, which has been looked on as a more or less mysterious property of the drugs which exhibit it. This so-called cumulation is nothing but the accumulated effects of several doses. The following will illustrate the action: A cat received 75 per cent. of the fatal dose of digitalis intravenously at one dose; a week later it received 50 per cent. of a normally fatal dose (or two-thirds as much as it had received a week previously), and succumbed promptly, the reason being that at least 50 per cent. of a fatal dose remained in the heart, or that the action of that much remained in effect, and when 50 per cent. of the usually fatal dose was given its effects were added to those already present and the heart was brought to a standstill. A similar summation of effect results when several therapeutic doses are administered to man, and a given symptom appears when the added effects suffice to produce the symptom.

Laboratory experiments show that the effects of a single very large dose of digitalis or digitoxin may persist in part for two weeks or more, and clinical tests have shown that the effects of full therapeutic doses of digitalis may not completely disappear for ten days or more. The effects of strophanthin disappear much more rapidly, usually within from thirty-six to forty-eight hours.

Little is known concerning the fate of the digitalis bodies in the human body, but the persistence of the action on the heart and central nervous system suggests that some of them at least are destroyed or eliminated slowly. It is important to note, however, that they leave the blood-stream of all animals hitherto examined within a few minutes after intravenous injection, and they also appear to act on the blood-vessels only while they are present in the blood-stream.

(*To be continued*)

3. Hydremia, however caused, as by the rapid absorption of water from the gastro-intestinal tract, causes a similar diuresis. The physician may convince himself of this by the simple experiment of drinking several glasses of hot water while avoiding active perspiration, and observing the amount of urine secreted. The experiment should be begun when the stomach is nearly empty.

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SATURDAY, MAY 8, 1915

THE BACTERIOLOGY OF APPENDICITIS

The credit of establishing the tremendous significance of inflammation of the vermiform appendix belongs to the medical profession of the United States which, it now seems likely, is also to make noteworthy contributions to the study of the etiology of the disease. The part played by foreign materials is no longer emphasized, since they are only rarely encountered. Even fecal concretions, which were formerly charged with responsibility for a large percentage of attacks, are now regarded as being produced within the appendix itself, rather than entering this organ from the cecum. Despite the fact that concretions and foreign bodies are always a menace and are capable of initiating destructive as well as irritating effects on the mucosa, the chief interest in the etiology of appendicitis at the present moment centers in its bacteriology.

The preponderant micro-organism found in cases of appendicitis is undoubtedly the colon bacillus. Sometimes it is present in pure culture; frequently it is associated with other organisms such as streptococci or staphylococci. The majority of cases appear to represent a mixed infection. It has been assumed as probable by some writers that the milder cases with more definitely localized peritonitis and relatively benign clinical symptoms are principally due to colon infection, while the more intense cases are of streptococcic or anaerobic nature.

In comparison with the appendix, no part of the gastro-intestinal tract is supplied so richly with lymphoid tissue except the tonsillar region. This fact perhaps accounts for the local susceptibility to infection in each of these anatomic localities, particularly in the young, in whom little involution of the lymphoid tissue has yet taken place. Appendicitis has been reported in association with other diseases in which special tissues are invaded by micro-organisms. This is not equivalent, however, to saying that appendicitis is merely a blood infection and is a part of widespread lesions due to the existence of large numbers of bacteria in the blood stream. Some factor is needed to account for the specific localization of the micro-organisms in the appendixes.

Dr. E. C. Rosenow[1] of the Memorial Institute for Infectious Diseases, Chicago, has thrown some light on the development of appendicitis by a careful differential bacteriologic study of the fluids and tissues in and about the appendix and of the tonsils and other possible foci of infection, together with introduction of the isolated strains of micro-organisms into animals. In the lumen of the appendix the colon bacillus was always found in predominating numbers, whereas the cultures from the wall showed that the chief bacteria there were streptococci. The nature of the bacterial flora of the tonsils in the different cases was not so characteristic, though streptococci were found in all the cases examined.

Rosenow's experiments indicate that, in the absence of foreign bodies, appendicitis commonly is a hematogenous infection, secondary to some distant focus like the tonsil. The striking feature is the demonstration that the disease develops when for some reason the organisms in this focus, usually streptococci, have acquired an elective affinity for the appendix and at the same time gain entrance into the circulation. In animal injections the tonsillar strains of micro-organisms from human cases produced appendicitis in nineteen of twenty-nine, the appendix strains in twenty-two of thirty — a total of forty-one out of fifty-nine trials. In further accord with the view advanced is the observation that after cultivation on artificial mediums for a short time the elective affinity is soon lost, and strains isolated from human tonsils some time after appendectomy also appear without elective affinity. The colon bacillus is to be regarded in most cases as a secondary invader, because it is found both by cultures and in sections either in decreasing numbers from the lumen outward, or is displaced entirely by streptococci. Experimentally it appears to be almost impossible to produce appendicitis by intravenous injection of colon bacilli without injuring the mucous membrane.

These important newer researches help to explain the stated frequent occurrence of appendicitis, at times almost in epidemic form, when throat infections are particularly prevalent. They emphasize the importance of a thorough search for, and the removal of foci of infection from which appendicitis may originate in the indirect ways pointed out. If the conclusions prove to be correct, it is a distinctive contribution on the part of Rosenow that a focus of infection is to be looked on not only as the place of entrance of bacteria, but also as the place where they may acquire the varying affinities necessary to infect distant organs and tissues. Finally, we may quote from Rosenow, in accord with the assertions of Heyde,[2] Aschoff,[3] and others,

1. Rosenow, E. C.: The Bacteriology of Appendicitis and its Production by Intravenous Injection of Streptococci and Colon Bacilli, Jour. Infect. Dis., 1915, xvi, 240.
2. Heyde: Beitr. z. klin. Chir., 1911, lxxvi, 1.
3. Aschoff: Ergebn. d. inn. Med. u. Kinderh., 1912, ix, 1.

that appendicitis is a serious disease, not so much on account of the virulence of the infecting micro-organisms, as on account of the anatomy of the appendix, which favors strangulation and thus the growth especially of facultative and strict anaerobes.

A METHOD OF CEREBRAL DECOMPRESSION

The usual methods of relieving intracranial pressure in instances of hydrocephalus and inoperable brain tumors are not entirely satisfactory since huge deformities may result, the symptoms in some midbrain lesions may become exaggerated, and motor tracts may be injured by distortion or dragging of the ventricles following release of pressure. In some cases the operation of decompression is itself of serious nature. Therefore, any method that minimizes these dangers and is easily performed merits consideration.

Anton and von Bramann have described a procedure for the relief of internal hydrocephalus which seems to be an improvement over similar operations, and these workers and later Elsberg[1] have found it equally suitable for cerebral decompressions, as it is free from the undesirable features just enumerated. A small scalp incision is made at right angles to the frontal suture, 1 or 2 cm. from the midline and from 1 to 2 cm. from the coronary suture, and a small button of bone is removed with a trephine; the dura is slit and a small curved cannula is pressed through the opening and down to the corpus callosum, the tough falx cerebri which lies between the cerebral hemispheres being used as a guide. With gentle pressure the cannula is pushed through the corpus, and when through, the ventricular fluid begins to escape. The opening in the corpus is enlarged by moving the lower end of the cannula backward and forward until a slit 1 cm. in length is made. The cannula is then withdrawn and the dura and skin incisions closed. Owing to the increased intraventricular pressure, the fluid continues to escape through the opening in the corpus and keeps it patent. The objection to this method lies in the possibility of an early closure of this artificial opening. Von Bramann, however, reports seventeen cases of internal hydrocephalus in which the operation was performed in this manner, and notes marked improvement in fifteen. Spasticity, ataxia and the visual disturbances diminished and the intelligence improved. Some of the patients developed normally, and in such instances it would seem that the opening in the corpus must remain patent.

The applicability of this method for the relief of intracranial pressure due to neoplasms is supported by a number of facts. The main cause of the increased tension may not be due to the encroachment of a growing tumor, but cerebral edema, first described by Reichardt, hyperplasia of the affected lobe, recently demonstrated by Spiller, and internal hydrocephalus play important rôles. Any interference with the flow of spinal fluid from the lateral ventricles through the aqueduct of Sylvius to the fourth ventricle and spinal cord results in a stagnation of the fluid and a distention of the ventricles. Increased intraventricular pressure causes a collapse of the thin walled cerebral veins, which, in turn gives rise to congestion, edema and a further increase of intraventricular fluid. Thus a vicious circle is established. Tumors pressing on the choroid plexus or the veins of Galen give similar results, and hence are equally important with tumors pressing on the aqueduct of Sylvius, so far as intracranial pressure is concerned. If these hypotheses are correct, then dilated ventricles should be present in instances of intracranial tumors, and Elsberg found ventricular distention in 372 of 500 cases, that is, in 75 per cent. Thus, in a considerable number of cases, temporary relief from symptoms of pressure may be expected to follow drainage of the ventricles and a consequent reduction in their size.

The procedure is simple, quickly done and is not attended with the usual dangers of decompression. Elsberg has used it thirty-seven times, mostly in instances of brain tumor. Two of his patients, comatose at the time of operation, needed no anesthetic, and relief was so prompt following drainage of the ventricles that they talked before leaving the operating room. Several patients were improved for as long as six months. If no increase of fluid is found in the ventricles, no harm is done, and one of the usual methods of decompression may be employed.

The length of time the opening through the corpus remains patent is not definitely known, the statistics at present being too few; but those who have used it have faith in its efficiency and hold it the operation of choice in midbrain, subtentorial and unlocalized intracranial tumors and in all cases of nonobstructive hydrocephalus.

1. Elsberg, C. A.: Puncture of the Corpus Callosum with Special Reference to Its Value as a Decompressive Measure, Jour. Nerv. and Ment. Dis., 1915, xlii, 140.

THE HUMAN GASTRIC SECRETION

Since the pioneer investigations of Dr. William Beaumont, that "backwoods physiologist," as Osler has named him, and his epoch-making contributions to our knowledge of the functions of the human stomach, nothing has added so much to these early beginnings as did the classic researches of Pawlow on dogs. A medical audience might take exception to this sweeping statement in order to point out the advances that are represented in the introduction of the stomach tube and the help which it has given in elucidating the problems of gastric function. In the light of these facts, it is surely a matter of no small moment that in recent years a competent physiologist has had an opportunity to reexamine in man the questions that have been raised by the investigations of the past,

and to supplement the findings of those who worked under conditions less favorable in respect to either opportunity or subjects. For several years Professor Carlson of the University of Chicago has had under observation a second Alexis St. Martin in the person of a young man who has had a complete cicatricial stenosis of the esophagus and gastrostomy since the age of seven.

New facts learned in a careful study of this chance subject, who is a normal man except for the defects and the fistula just referred to, have been mentioned in THE JOURNAL.[1] The additional contributions that are being published from time to time, supplemented as they frequently are by corroboratory evidence on other human individuals and on laboratory animals, are so replete with matters of interest to the student of medicine that we must revert to them. Quite lately, for example, novel data have been reported in respect to the secretion of gastric juice in man.[2] The methods employed cannot be detailed here; but, taken in conjunction with other known facts, they lead to the estimate that an adult person secretes on an average meal (dinner) 700 c.c. of gastric juice, or an average total of 1,500 c.c. (about three pints) in twenty-four hours.

It will come as a surprise to many to read that the gastric glands in the normal person are never completely quiescent. The continuous secretion varies from 2 to 50 c.c. per hour, though the higher figures are exceptional. Obviously such facts, if they are well established, have an important bearing on the interpretation of the thousands of gastric analyses which clinicians are continually dealing with. They bring to mind the statements of Rehfuss, Bergeim and Hawk[3] on the presence of secretion in the stomach independent of the intake of food.

According to Carlson, the mere act of chewing indifferent substances, and the stimulation of nerve endings in the mouth by substances other than those directly related to food, cause no secretion of gastric juice. This is in complete accord with the teachings of the Pawlow school, which has derived its information from experiments on dogs. Other investigators who have chanced to study human cases of gastric fistula have now and then maintained that seeing, smelling and possibly thinking of palatable food, as well as the mastication of vapid substances, cause something more than the very slight transitory secretion of gastric juice noted under these conditions in the Chicago subject. There may, of course, be great individual variations where, as here, psychic factors are involved. At any rate, in any of the conditions referred to, nothing is evoked in a degree comparable to the secretion of gastric juice on mastication of palatable food. Appetite is a potent factor in this process. During mastication of acceptable food, the average rate of secretion was 3.5 c.c. per minute. On cessation of chewing, the rate diminished rapidly, so that in from fifteen to twenty minutes the gastric glands reached the level of the continuous secretion again.

Some of the practical aspects of these observations may be brought into prominence here. The mastication of bread and butter, or the taking of milk into the mouth yielded much less gastric juice than the chewing of meat or oranges. Desserts, of which the subject was particularly fond, were even more effective. It may be that the taste nerve endings are stimulated more intensely by the readily diffusible substances in some of these foods which reach the gustatory organ in marked concentration. We are reminded that the mastication of a palatable dessert or fruit at the end of the meal truly serves to augment and prolong the appetite secretion of gastric juice.

1. The Stomach in Hunger, editorial, THE JOURNAL A. M. A., Feb. 8, 1913, p. 448; Another Alexis St. Martin, Feb. 22, 1913, p. 598; Inhibitory Phenomena of the Stomach, March 1, 1913, p. 669.

2. Carlson, A. J.: Contribution to the Physiology of the Stomach, xxi, The Secretion of Gastric Juice in Man, Am. Jour. Physiol., 1915, xxxvii, 50.

3. Rehfuss, M. E.: Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, THE JOURNAL A. M. A., July 4, 1914, p. 11; Sept. 12, 1914, p. 909.

THE EXPOSURE OF DENTISTS TO MERCURIAL POISONING

The importance of mercury as a cause of chronic mercurial poisoning has decreased somewhat in recent decades, owing to a better appreciation of its dangers and to changes in the industrial processes in which it was formerly widely applied. The chief industries in which this poisoning is now seen are mercury mining and smelting, the manufacture of thermometers, barometers and other apparatus of which mercury forms an essential part, chemical plants, and the manufacture of felt hats, in which nitrate of mercury is used at certain stages of the treatment of the felt. Chronic poisoning from the medicinal use of mercury is extremely infrequent at present; and the evidence of ptyalism commonly serves as a warning to withdraw the drug before the more extreme types of symptoms manifest themselves.

There is a peculiarly insidious feature to the industrial danger of mercury in that this element can, without question, enter the system through inhalation as vapor. When mercury itself is used there are ready opportunities for its entrance in this way into the organism, because the metal volatilizes at ordinary temperatures; and furthermore, the heating processes employed in some of the industries largely increase the volatilization. To this may be added the creation of mercury-laden dust, which facilitates the inhalation of minute particles. It is believed by some hygienists that inhalation represents the chief mode in which occupational poisoning by mercury occurs, although the possibility of absorption through the skin cannot be denied, particularly in view of the fact that admin-

istration of mercury by skin inunctions has long been a therapeutic procedure.

The widespread daily use of amalgams by dentists has often raised the question as to whether they are exposed to the dangers of chronic intoxication with mercury. Any one who has watched the process of "filling" a tooth with the amalgam materials is familiar with the opportunity which it offers for the distribution of the mercurial substances on the hands of the operator. The gold, silver or platinum preparations are rubbed with mercury in a mortar until amalgamation occurs and a more or less plastic mass is obtained. This procedure is followed by a further manipulation of the mass in a small rubber receiver held in the palm of the hand; all too frequently one sees the dentist use his unprotected fingers to manipulate the plastic amalgam and give it the desired consistency. The materials used in the process are commonly measured out by guess, whereby an excess of mercury not infrequently is present and is squeezed out in the form of fine droplets that are easily scattered about.

The use of the fingers in the preparation of an amalgam for immediate use in filling dental cavities is defended on the ground that it is almost impossible to secure a proper consistency in any other way. It will be observed, therefore, that opportunity for the absorption of mercury is offered in at least two ways. First, it is conceivable that some of the element may be taken up through the skin. Secondly, the possibility of inhalation on the part of both operators and assistants is indicated by the presence of mercury in containers that may not be closed, and the haphazard scattering of mercurial substances in the neighborhood of the dentist and sometimes on the floor, where it remains to be slowly vaporized from the crevices. Copper amalgams offer an even more obvious danger in that they are heated before use.

An indication that the possibility of the absorption of mercury under conditions such as have been indicated may become a reality has been furnished by Blomquist.[1] His analyses of the urines of persons engaged in institutes in which mercury is employed and of the air in such places gave positive indications of the absorption of the element. A more elaborate investigation of the question with special reference to dentists has been reported by Schulte[2] working under the advice of the Würzburg hygienist, K. B. Lehmann. Without exception he found evidences of the presence of mercury in the urines of all the individuals—ten dentists and eight dental assistants—examined by him. The quantities were small, rarely exceeding 0.05 milligram per day. The output in the urine was no larger in the case of dentists who were accustomed to work up their amalgam in the unprotected hand than for those who did not permit a direct contact of the metals with the skin. From this fact it is concluded that the mercury is absorbed by way of the respiratory passages rather than through cutaneous channels.

From the point of view of their possible hygienic significance, quantities of mercury of the magnitude indicated by Schulte's analyses are not very ominous. Patients under mercurial inunction treatment frequently excrete far more of the element without exhibiting any signs of mercurial intoxication. Clinical literature seems to be correspondingly free from indications of mercurial poisoning among dentists. Ptyalism and stomatitis are apparently not encountered among members of the dental profession.

In the light of Schulte's report, the need of insistence on the use of protective gloves by dentists during the preparation of amalgams cannot be sustained. The reason that absorption does not follow readily through the skin of the dentist's hand is perhaps to be found in the fact that mercury as such, rather than greasy ointments, is presented to the cutaneous surfaces and fails to adhere firmly, owing to the different surface tension in the two cases. From a prophylactic point of view, the measure to be instituted to avert the possible though apparently remote danger of undue intake of mercury by dental workers consists in liberal ventilation, whereby the volatile mercury and mercurial dust are suitably dissipated. This is equivalent to saying that in a well-ventilated room, such as any working place or human habitation should represent, the dangers to the dentist are minimal. With this, actual experience in practice seems to correspond.

1. Blomquist: Ber. d. deutsch. pharm. Gesellsch., 1913, No. 1, p. 29.
2. Schulte, H.: Ueber die Gefahr einer Quecksilbervergiftung bei Zahnärzten, Arch. f. Hyg., 1914, lxxxiii, 43.

Current Comment

THE ACTION OF MOLDS ON CERTAIN CRUDE DRUGS

Although the increasing use of isolated active principles and of synthetic drugs in place of the cruder natural pharmaceutic products of former years tends to diminish somewhat the significance of the quality of the latter so far as exact standardization for official use is concerned, the time has not yet arrived when the variation of crude drugs can be overlooked. This is particularly true of such materials as opium, on the supply of which medicine is so extremely dependent. In view of the availability of its component alkaloids such as morphin, codein, narcotin, etc., as isolated compounds, it matters somewhat less than it did a few years ago whether or not the composition of marketed opium is absolutely unvarying so that the tinctures and extracts made from it shall have a uniform composition. Nevertheless changes in the drugs are unwelcome for a variety of obvious reasons. The harvesting of inferior products is, of course, undesirable; but a deterioration of the drug in the course of its storage is an actual damage to those concerned. Molds of the type of *Penicillium* and *Aspergillus* have

been found growing on levantine opium, and the question has been raised as to whether or not the alkaloid content is decreased by such vegetation. These molds freely utilize the ordinary plant constituents such as proteins and carbohydrates in their metabolism; and they grow freely on a great variety of vegetable substrates, as everyday experience demonstrates. This does not necessarily signify that they can also utilize the alkaloids, most of which have a decidedly toxic effect on animal forms. By the test of the actual experiment of growing representative molds on opium and also on such mixtures of opium and diluent sugar as find their way into commerce, von Friedrichs[1] has found that either no loss or at most insignificant changes in the quota of such alkaloids as morphin, narcotin and codein occurs. Assumed damage by molds to improperly conserved opium need therefore no longer be feared.

THE VASOMOTOR CENTER IN SHOCK

"The successful observations in physiology — the observations that largely influence opinion — are commonly attended by parasitic hypotheses. Useful as these may be, they have in themselves no demonstrated truth, but derive their apparent credibility from their associations. Bathed in the radiance of the Great Fact, they seem to shine with their own light, and, as years pass, their doubtful origin is almost or quite forgotten." [2] This suggestive statement by Porter might well be applied to some of the hypotheses which have been drawn on to explain that indefinite complex of phenomena spoken of as "shock." Inasmuch as the latter not infrequently bring about complications which have a decided clinical interest, the practitioner has been quick to reach out for theories which might help him combat the symptoms. Among the explanations ventured for the condition of shock is the assertion that this manifestation is the result of a fatigue of the vasomotor center. On the surface, such a theory exhibits an element of plausibility, wherefore one finds it recurred to again and again as if it were a demonstrated fact. Porter[3] and his collaborators in the Harvard Medical School, as well as other investigators, have denied this repeatedly. They have shown that blood-pressure changes of a normal sort can still be brought about by stimulation of the depressor nerve in animals during shock, so that exhaustion of the vasoconstrictor neurons cannot, therefore, be the essential cause of the symptoms. If more evidence were needed, it might be found in the newer experiments of Seelig and Joseph[4] at the St. Louis University School of Medicine. They induced deep shock in anesthetized animals with opened abdomen by manipulation of the abdominal viscera and application of cold water. Without reviewing here the details of their method, the outcome may be taken as failing to indicate any paralysis of the vasomotor center. Even in the course of the severest symptoms of shock, this center was not only not paralyzed but, on the contrary, was maintaining a tonus in some of the peripheral vessels of sufficient strength to prevent dilatation of them when the blood pressure was artificially raised from the shock level of 18 mm. of mercury to 75 or 85 mm., or in some cases even higher. We believe that this chapter of the shock problem is at least temporarily closed.

1. Von Friedrichs, O.: Ueber die Einwirkung von Schimmelpilzen auf den Alkaloidgehalt des Opiums, Ztschr. f. physiol. Chem., 1914, xciii, 276.
2. Porter, W. T.: The Relation of Afferent Impulses to the Vasomotor Centers, Am. Jour. Physiol., 1910, xxvii, 276.
3. Porter, W. T., and Quinby, W. C.: The Condition of the Vasoconstrictor Neurons in "Shock," Am. Jour. Physiol., 1903-1904, x, 12; Boston Med. and Surg. Jour., 1903, cxlix, 455.
4. Seelig, M. G., and Joseph, D. R.: On the Tonus of the Vasomotor Center in Shock, Proc. Soc. Exper. Biol. and Med., 1914, xii, 49.

LAY VIEWS ON VACCINATION AGAINST SMALLPOX

Although it considers antivaccination legislation a remote possibility at the present session of the Pennsylvania legislature, the Philadelphia *Record* advises caution, since "the antivaccinationists are as industrious as beavers and as persistent as terriers"; as their measures are cropping up continually, "unless public attention is kept on their campaign they will here and there succeed in their efforts to popularize smallpox." This disease in the eighteenth century is spoken of as "the most appalling foe to the human race," but in recent times has been so thoroughly suppressed that in some communities havoc resulted because it was not recognized by physicians, who had never seen a case. The specious argument of the antivaccinationists that, because smallpox is rare there is no occasion for vaccination, is answered by saying, "Let vaccination be abandoned for a few years, and there will be enough smallpox to make the people, lay and medical, familiar with it." Indeed, the people of a great many communities are becoming familiar with it to their serious cost, for the disease, because of neglect of vaccination, seems to become more widespread each year. The right of the people to protect themselves from the disease is thus put by the *Record:* "Persons who insist on their right to have smallpox if they wish it, or choose to take their chances, assume precisely the attitude of the man who insists on his right to build a frame house in the middle of a city. If he is willing to take the chance of a fire, he says, whose business is it? Well, it is very plainly the business of the neighbors whose houses would be endangered by the presence of a combustible structure. The unvaccinated child is a menace to a school because he may at any time develop the disease, and if so, he has probably communicated it to a dozen other children of parents who insist on their constitutional rights to take and disseminate smallpox. No man has the right needlessly to make himself or his child a possible conveyor of an appalling pestilence." The New Haven *Courier,* while not condemning vaccination or upholding the antivaccinationists, criticizes the working in New Haven of the compulsory vaccination law, which caused a reputable citizen to be imprisoned because he refused to have his child vaccinated in order to enter the public schools. The *Courier* believes that such laws "savor of an earlier generation." Vaccination itself the *Courier* does not discuss, because confessedly it knows little of the subject; but it deems it a safe contention that if "vac-

cination is so important for the welfare of the community at large that it is within the right of the state to compel public school pupils to submit to it on pain of jailing their parents, then it should be within the power of the state to compel general vaccination." Both editors seem to be in favor of compulsory general vaccination; one willingly, because of the clear verdict of history; the other because the logic of the situation compels him to accept it.

HOW MEDICAL LITERATURE WAS MADE

On Sept. 26, 1872, there was reported in the *Boston Medical and Surgical Journal* under the heading of "Medical Miscellany" the birth, in Trumbull County, Ohio, of three girls and five boys in a single birth. "They are all living, and are healthy, but quite small," said the *Boston Medical and Surgical Journal;* and it continued, "Mr. Bradlee was married six years ago to Eunice Mowery who weighed 273 pounds on the day of her marriage. She has given birth to two pairs of twins, and now eight more, making twelve children in six years. Mrs. Bradlee was a triplet, her mother and father being twins, and her grandmother the mother of five pairs of twins." Naturally this report excited considerable interest and was widely copied in medical literature. Gould and Pyle included it in their "Anomalies and Curiosities of Medicine," and stated that all cases thus far reported of more than six children at a birth are to be regarded as of very doubtful value. Recently an attempt was made to ascertain the truth of this story. On investigation, it appears that a practical joker of those days went into one of the newspaper offices in the city mentioned and set up an article which he succeeded in having printed in one or two copies of the paper. He then took the article out and distributed the type. Securing the copies which had the article in them he sent them to a New York paper, from which it was copied in the *Boston Medical and Surgical Journal,* and following this publication passed into medical literature. In its current issue our Boston contemporary states that it is glad to publish a correction of the item even at this late date. The incident points to the necessity of accurately checking unusual reports before publishing them as scientific literature.

Criticism Regarding Unvaccinated Nurses.—The *Bulletin* of the Chicago School of Sanitary Instruction caustically comments on the failure of a Chicago hospital to have all the nurses vaccinated, and asks when everybody will become wise and careful enough to adopt this simple preventive measure.

It says:

"This week, for the thousandth time or more, a reason was presented for the consideration of those who desire to escape a disease that is easily preventable. A Chicago hospital with a training school for nurses neglected the formality of having all the nurses vaccinated. An unrecognized case of smallpox came in contact with these nurses, and three were taken to the isolation hospital suffering with smallpox. All the nurses in the hospital had been vaccinated except the three who contracted the disease. These never were vaccinated and were not required to be vaccinated when they entered the nurses' training school."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Portrait Given Medical Society.—Mrs. Duke W. Goodman, Mobile, has presented a portrait of her husband, the late Dr. Duke W. Goodman, to the Mobile Medical Society, of which he was formerly president.

Hospital Notes.—Birmingham is to have a large, new, free dispensary. It will cover a large area and will be three stories in height and will cost about $35,000. The institution will be operated as a branch of the medical department of the University of Alabama.

Personal.—Drs. Isaac C. Watkins and Henry B. Wilkinson have been elected members of the membership council of the Chamber of Commerce of Montgomery.——Dr. Robert L. Huddleston Speigner, has been reappointed prison physician at Gadsden.——Dr. Frank F. Blair, Coalburg, has been appointed physician to the Flat Top Mines Prison, succeeding Dr. John W. Watts, Montgomery.

Alumni Organization.—The Alumni Association of staff physicians of the Alabama state hospitals was organized at Birmingham, April 23, and the following officers were elected: president, Dr. William D. Partlow, Tuscaloosa; secretary, Dr. Le Baron. It was decided that the association should meet every year at the same time as the State Medical Association and a committee was appointed to draft constitution and by-laws for the organization.

State Association Meeting.—At the annual meeting of the Medical Association of the State of Alabama held in Birmingham, April 20 to 23, the following officers were elected: president, Dr. J. Norment Baker, Montgomery; vice-presidents, Drs. Edward B. Ward, Selma and Abner N. Steele, Anniston; secretary, Dr. Henry G. Perry, Montgomery, and treasurer, Dr. Jacob U. Ray, Woodstock. The association opposed by a vote of 140 to 25, the endorsement of a new health bill which would divorce the State Medical Department from the association. A new scheme was adopted by which each county will have as many delegates to the state association as it has to the state legislature, providing no county has less than two delegates. The next annual meeting will be held in Mobile.

CALIFORNIA

Antivaccination Bill to Senate.—By a vote of 36 to 25 the Gelder anticompulsory vaccination bill was denied reconsideration in the house of representatives at Sacramento and the bill will go to the senate. It provides that there shall be no discrimination by school authorities against schoolchildren whose parents do not have them vaccinated. The law now requires unvaccinated children to leave school on the appearance of smallpox in a community.

Steamers Quarantined.—The steamer *Northern Pacific* was detained at San Diego, April 8, on account of the presence of a case of smallpox among its passengers. The passengers were examined and vaccinated at San Diego and the ship was allowed to go to San Francisco where she laid in quarantine until April 13, when she was given a clean bill of health. ——A case of smallpox on board the steamer *Chiyo Maru,* which arrived from Japan in San Francisco, April 19, caused the detention of the vessel in quarantine pending the examination of the passengers.

Personal.—Dr. Albert H. Sweeney has been elected health officer, Dr. William L. Adams, assistant health officer and emergency physician, and Dr. Grace L. Thorne Hopkins, city bacteriologist of Fresno.——Dr. John L. Pomeroy has been appointed health officer of Monrovia.——Dr. Samuel H. Hurwitz, formerly of Harvard Medical School, has been appointed instructor in medical research in the George William Hooper Foundation for Medical Research of the University of California.——Dr. Fred W. McKibbon, Oakdale, has purchased the Oakdale Hospital.——Dr. Robert A. McLean, San Francisco, who has been seriously ill with hemorrhage of the stomach, is reported to be improving.——Dr. Walter B. Power, Redlands, has returned from Europe.——Dr. Arthur L. Brown, Riverside, has been appointed health officer of Riverside County.

ILLINOIS

New Hospital.—Work on the new Iroquois Hospital, Watseka, for the building and maintenance of which Mrs. Anna Donovan contributed $50,000, is almost completed and the equipment will be installed this month.

Personal.—Dr. Walter H. Watterson, Waukegan, has been appointed head physician of the tuberculosis department of the Cook County Tuberculosis Sanatorium, Oak Forest, succeeding Dr. Glenford L. Bellis, resigned.

Physicians' Club Election.—At the annual meeting of the Physicians' Club of Geneseo, April 12, the following officers were elected: president, Dr. Charles S. Young; vice-president, Dr. John H. Murphy, and secretary-treasurer, Dr. Wilbur F. Spencer.

Building for Physicians.—A building has been erected on East Capitol Avenue, Springfield, especially for the use of physicians and dentists. The building will be 60 by 40 feet, two stories in height and will contain thirty rooms arranged in suites.

Chicago

More Funds for Hospital.—The County Board is expected to approve the submission to voters of a bond issue of $1,000,000 for the completion of Cook County Hospital, including a new morgue and power house.

Physicians Day at Fellowship Club.—At a meeting of the Irish Fellowship Club, May 1, an open forum for Chicago professional and business men was inaugurated. Patrick H. O'Donnell, the recently elected president, called Dr. Patrick J. H. Farrell to the chair and addresses were made by Drs. William A. Evans, A. Augustus O'Neill, John Dill Robertson and Truman W. Brophy.

Hospital Negotiates Loan.—The sister superior in charge of Mercy Hospital has negotiated a loan of $200,000 with the Massachusetts Mutual Life Insurance Company for an addition to the institution. The loan is temporary and will be repaid from a bequest made by the late Charles Haines of St. Charles, Ill. The new addition will be a five-story brick building, 175 feet long and will provide more than 100 additional rooms.

Personal.—Dr. Alice M. Smith, a member of the staff of the Chicago State Hospital, Dunning, has been made a Fellow of the Royal Society of Arts of London, England.——Dr. Henry G. W. Reinhardt, chief coroners' physician, celebrated his silver wedding anniversary, May 1.——Health Commissioner John Dill Robertson has succeeded Dr. George B. Young as chairman of the morals commission.——Dr. Henry B. Favill was elected president of the National Dairy Council at its meeting in Chicago, April 24.

Work of the Health Department.—The last annual message of Mayor Harrison, who retired April 25, contains much of interest concerning the work of the health department under the direction of Health Commissioner Dr. George B. Young, who also retires to take up his work again with the Public Health Service. The total number of employees of the department in 1911 was 536 and in 1914, 746. The per capita appropriation for the health department work proper for 1911 was .287; for 1912, .314; for 1913, .308, and for 1914, .438. Though there has been a considerable increase in the total appropriation it has not kept pace with the proportionate increase in population, as the estimated increase in population, 1911 to 1915, was 6.6 per cent., while the increase in appropriations amounted to only 5.2 per cent. The death rate per thousand of population was 14.49 in 1911 and 14.18 in 1914, not an extraordinary decrease, but as the message points out, the benefits to the city from increased health appropriations are not to be measured exclusively by a decreased death rate. It is said that if there had been the same death rate in 1914 as in 1911 there would have been 1,549 more deaths, and taking the average value of a life as $5,000 the total saving in this respect was $7,745,000. In a comparison of the death rate of babies in Chicago of 2.87 per thousand of population with that of New York of 2.43, it is said that this difference may be accounted for by the fact that the appropriations in Chicago in 1914 for infant welfare work was $4,000, while in New York it was $215,000. In the limited districts of the congested area in which summer infant welfare work was conducted, the infant mortality was 17 per cent. less than in the city as a whole. The improvement in the typhoid death rate during the four years covered by the administration was from 1.078 in 1911 to 0.697 in 1914, with a low point also in 1912 of 0.762. Among other notable changes in methods and improvements in conditions, were the relaxation of quarantine measures in infectious diseases so that by isolating the patient, other members of the families were not compelled to lose time from work, a desirable measure which resulted in no increased spread to susceptibles. The excellent housing ordinance of the city has been enforced in such a way that it is said that new construction of typical tenement conditions that deface many cities is impossible in Chicago. Among other measures inaugurated or pursued vigorously under the administration were the inspection and condemnation of foods not up to the standard, the sampling of water and sanitary surveys of water supply conditions, the sanitation and heating of street cars, hospital control and inspection and garbage disposal. During the term of Mayor Harrison the garbage question was placed in an improved state by the acquisition of a reduction plant and the erection of a number of crematories or disposal plants, so that with improvements now under way garbage disposal in Chicago bids fair to be a source of income rather than expense. In the settlement of this garbage question the health department had a great share. The handicap of legal difficulties surrounding the enforcement of the milk ordinance was finally cleared away by a supreme court decision in 1914, making it much easier to carry out necessary steps, though through the vigorous exercise of authority of a general nature the department kept the milk supply in a fairly good condition.

IOWA

Medical Society to Care for City and County Patients.—A contract has been entered into by the Black Hawk County Medical Society and the Waterloo Medical Society, and the city of Waterloo to furnish medical attendance to city and county patients. The contract becomes effective April 27 and calls for the payment of $1,500 annually to be paid jointly by the city and county.

Personal.—Dr. David S. Fairchild, Jr., Clinton, entertained the Iowa State Surgeon's Association, April 24.——Dr. William S. Morton, Muscatine, has been appointed local surgeon for the Rock Island system——Dr. John H. Shipley, Rippey, sustained serious injuries by the overturning of his automobile near Perry, April 22.——Dr. Edward D. Middleton, Davenport, is serving as chief medical officer on the steamship *Anglo-Australian*, sailing between New Orleans and Bristol.

Society Approves Sanatorium.—At a special meeting of the Pottawattamie County Medical Society held in Council Bluffs, April 15, a formal endorsement was given to the proposed county tuberculosis sanatorium and a committee was appointed, consisting of Drs. Vernon L. Treynor, Henry B. Jennings and John S. McAtee, to take the matter up again with the county board and confer regarding the kind of sanatorium to be established and its location. A tent colony is favored and the location proposed is on the farm at the county home near McClelland.

KENTUCKY

County Society Reorganized.—At a meeting of the physicians of Nicholas County April 1, called by Dr. George B. Spencer, Carlisle, the Nicholas County Medical Society was reorganized.

Course on Fractures and Dislocations.—A special course of lectures and clinics on fractures and dislocations during the week of May 31 to June 5, will be held for the members of the Kentucky State Medical Association which meets in Louisville at that time.

Personal.—Dr. Simeon K. Fisher, Milton, is reported to be seriously ill with heart disease.——Dr. George L. Barr, Owensboro, was painfully injured in a collision between automobiles, April 16.——Dr. Moreau S. Browne, Winchester, who has been seriously ill, has recovered and resumed practice.——Dr. John L. Brown, Rothwell, was seized with cerebral hemorrhage and is reported to be critically ill.——Dr. Charles A. L. Reed, Cincinnati, was the guest of honor at a medical temperance banquet held in Lexington, April 6, over which Dr. Joseph A. Stucky presided as toastmaster.——Dr. W. N. Craig, Stanford, has been appointed deputy internal revenue collector under the Harrison antinarcotic law.

Tuberculosis Notes.—An appropriation of $1,000 was made to the city council of Hopkinsville April 16, toward the establishment of a summer camp for Christian County. The county has already appropriated $1,500 for this purpose.——Henderson County has appropriated $1,000 for the use of the County Tuberculosis Sanatorium.——At the annual meeting of the Louisville Antituberculosis Association April 12, the reopening of the Hazelwood Sanatorium was announced.

Dr. Oscar O. Miller, Louisville, has been appointed resident physician at the sanatorium and a medical advisory board of eighteen, headed by Dr. A. Morgan Vance, has agreed to assist the directors in the conduct of the institution.

LOUISIANA

Hygiene Lectures.—A course of lectures on the medical and social aspects of hygiene, organized by the superintendent of public schools of New Orleans, began March 26 and will continue for nine weeks. The first lecture was given by Dr. Charles C. Bass on "The Prevention of Malaria."

Dowling Advocates Health Exhibit.—Dr. Oscar Dowling, Shreveport, president of the Louisiana State Board of Health, addressed the members of the Florida Legislature by invitation April 15, at Tallahassee, urging the adoption of health legislation advocated by State Health Officer Dr. Joseph Y. Porter and also urging the preparation of an exhibit similar to that used in Louisiana.

Railway Surgeons Hold Meeting.—At the annual meeting of the Association of Louisiana and Mississippi Railway Surgeons held at Lake Charles, April 22, the following officers were elected: president, Dr. Charles McVea, Baton Rouge; vice-presidents, Drs. Manasseh L. Hoffpauer, Crowley; and Inman W. Cooper, Newton, Miss.; secretary, Dr. James J. Robert, Baton Rouge; and treasurer, Dr. Paul T. Talbot, New Orleans.

State Society Election.—At the thirty-ninth annual meeting of the Louisiana State Medical Society held in Lake Charles, April 20 to 22, the following officers were elected: president, Dr. James Clinton Willis, Shreveport; vice-presidents, Drs. Thomas H. Watkins, Lake Charles; Adolph Henriques, New Orleans; and John M. Mosely, Arcadia; secretary-treasurer, Dr. Laurence R. De Buys, New Orleans; chairman of the house of delegates, Dr. Addley H. Gladden, Monroe, and councillors, third district, Dr. J. W. Kenward Shaw, New Iberia; sixth district, Dr. James J. Robert, Baton Rouge; and eighth district, Dr. Eugene L. Henry, Lecompte.

Personal.—Dr. Herbert C. Cole, Bogalusa, underwent operation April 16.——Dr. Morton Paul Lane, New Orleans, has returned from Serbia where he served as assistant physician in the American Red Cross.——Dr. G. Farrar Patton, New Orleans, who has been ill with influenza affecting the middle ear and necessitating a mastoid operation is convalescent.——Dr. Joseph A. Danna, for many years house surgeon of the Charity Hospital, New Orleans, is to have conferred on him by the king of Italy, membership in the Order of Knights of the Crown of Italy, in recognition of his services to the Italian population of New Orleans.——Dr. Edward M. Hummel of the State Hospital for Mental Diseases, New Orleans, was publicly commended by the mayor recently for his excellent work at that institution during the last three months.

Yellow Fever Suspected.—Under date of April 15 two cases of yellow fever were reported to have been diagnosed by the marine hospital physicians at Morgan City. The disease was discovered on the American schooner Persis A. Colwell which arrived at quarantine from Demarara, British Guiana. The captain is said to have reported that the cook died from the disease March 25 and was buried at sea. P. A. Surgeon Richard H. Creel and Surgeon Rudolph H. von Ezdorf of the Public Health Service proceeded to Morgan City to investigate. Dr. McCleland, the only physician allowed on board the vessel reported that the two patients were improving, and it was believed that no new cases would develop. The cases have been determined not to be yellow fever. One of the suspects had typhoid fever and the other an inflammation of the throat.

MAINE

Alterations at Hospital.—Extensive alterations and changes are being made at the Maine Eye and Ear Infirmary, Portland, at a cost of about $10,000.

Personal.—Dr. George C. Precourt has been elected city physician of Biddeford, succeeding Dr. Omar E. Boivin.——Dr. Donald B. Cragin, Waterville, expects to resume practice this month.——Dr. Charles E. Williams, Houlton, is confined to his home by a severe attack of neuritis.

Increase Work of County Examiners.—The recent legislature passed a bill according to which the various county medical examiners will have their duties very materially increased after July 3, when the new act becomes a law. The office of coroner becomes automatically abolished on that date. The new law is patterned after the Massachusetts Medical Examiner bill.

Osteopathic Bill Defeated.—The osteopaths were defeated in their attempt to have a board of registration of their own. This bill has been presented at every meeting of the legislature for the past several years and with a strong lobby has received great support. Very fortunately the medical profession had several men in the upper and lower house who were able to muster enough support to defeat the measure again.

Hospital Opened.—The Madigan Memorial Hospital, under the charge of the Sisters of Mercy, recently opened its doors in Houlton. The hospital was given as a memorial to his father and mother by the late A. M. Madigan and consists of the beautiful Madigan Homestead with some 45 acres of land. The old building was entirely remodeled, a new brick wing containing a modern operating suite and men's surgical ward added which gives the institution a capacity of thirty beds.

State Sanatorium.—According to an act passed by the recent legislature the state will in the near future probably take over the sanatoriums at Bangor and Fairfield and conduct them as state hospitals for tuberculosis. Up to the present no reservations have existed for the care of needy persons suffering from this disease or those who were in an incurable condition. Under the provisions of this bill patients unable to pay the recognized fee will be admitted without charge, and the money that has in the past been given to private institutions will be used by the state in the running of the state institutions.

MARYLAND

Urologic Institute Open.—The formal opening of the James Buchanan Brady Urologic Institute at the Johns Hopkins Hospital, took place May 4.

To Discuss Child Problems.—One of the important events in connection with the meeting of the National Conference of Charities and Corrections in Baltimore, May 12 to 19, will be the meeting of the national conference on the education of dependent, truant, backward and delinquent children. This conference will begin its sessions May 10. E. E. Gardner, Howard, R. I., is president of this conference, and W. L. Kuser, Eldona, Iowa, is the secretary and treasurer.

Segregation of Habitual Drunkards.—The first step of the commission appointed by the governor to study the problem of dealing with the habitual drunkards of the state will be the segregation of this class from other prisoners at the Maryland House of Correction. The commission recommends that the drunkards be given outdoor work as far as practicable. Dr. Nathan R. Gorter, Baltimore, health commissioner, has been appointed one of the members of the commission.

Faculty Elects Officers.—At the one hundred and seventeenth annual meeting of the Medical and Chirurgical Faculty of Maryland, held in Baltimore April 27, 28 and 29, the following officers were elected: president, Dr. J. Whitridge Williams, Baltimore; vice-presidents, Drs. Lewis C. Carrico, Bryantown; Milton D. Norris, Eldersburg; and Joseph A. Chatard, Baltimore; secretary, Dr. Joseph I. France, Baltimore; and treasurer, Dr. William S. Gardner, Baltimore; delegate to the American Medical Association, Dr. G. Lane, Taneyhill, Baltimore; alternate, Dr. Herbert Harlan, Baltimore. Drs. John L. Riley, Snow Hill and Lewis A. Griffith, Upper Marlboro, were chosen to fill the vacancies on the State Board of Medical Examiners.

Personal.—Dr. Henry J. Berkley, Baltimore, has been appointed a member of the State Lunacy Commission to succeed Dr. John D. Blake, Baltimore.——Dr. William S. Thayer of the Johns Hopkins University School of Medicine, has been placed on the slate of eighteen Harvard alumni for a postal card ballot, the ten men receiving the highest number of votes to stand for election to the Harvard Board of Overseers on commencement day.——Dr. J. Percy Wade, superintendent of the Spring Grove State Hospital at Catonsville, has just completed twenty-three years' service at that institution, going in 1892 as assistant superintendent to the hospital and five years later becoming superintendent.——Dr. Thomas A. Ashby has returned from a visit to Georgia and South Carolina, where he went to assist in organizing alumni associations of the University of Maryland. In the near future he will go to North Carolina and West Virginia.

NEW YORK

Guests of Honor.—Drs. A. Walter Suiter and George Graves, who have served for forty-four years respectively as secretary and treasurer of the Herkimer County Medical Society, were given a testimonial banquet by that organiza-

tion, April 21, at which a Masonic pin was given Dr. Suiter and a Shriner's pin was presented Dr. Graves from the physicians of Herkimer Village.——A banquet was tended by the Fulton Academy of Medicine in honor of Dr. George G. Whitaker, who has practiced for fifty years in that city.——Dr. and Mrs. Lucien Howe, Buffalo, gave a reception, April 27, in honor of Dr. Victor C. Vaughan, Ann Arbor, Mich., president of the American Medical Association.

Medical Women Hold Meeting.—At the annual meeting of the Woman's Medical Society of the State of New York held in Buffalo April 27, the following officers were elected: president, Dr. Maud Josephine Frye, Buffalo; vice-presidents, Drs. Eveline P. Ballintine, Rochester; Annie Sturgis Daniel, New York City, and Mary Sutton Marcy, New York City; secretary, Dr. Mary Gage Day, Kingston; treasurer, Dr. Florence L. McKay, Rochester, and councillors, Drs. Josephine Walter, New York City; Inez A. Bentley, King's Park; Agnes E. Page, Albany; Lois L. E. Gannett, Adams; Florence L. Staunton, Utica; Anna M. Stuart, Elmira; M. Louise Hurrell, Rochester, and Nathalie K. Mankell, Buffalo.

State Society Meeting.—At the one hundred and ninth annual meeting of the Medical Society of the State of New York held in Buffalo April 27 to 29, under the presidency of Dr. Grover W. Wende, Buffalo, the following officers were elected: president, Dr. William Stanton Gleason, Newburg; vice-presidents, Drs. Montgomery E. Leary, Rochester; Henry L. Winter, New York City and Thomas H. McKee, Buffalo; secretary, Dr. Wisner R. Townsend, New York City (reelected); treasurer, Dr. Alexander Lambert, New York City (reelected); councillors, Drs. James E. Sadlier, Poughkeepsie; James S. Cooley, Mineola; Alvah H. Traver, Albany; Julius B. Ransom, Dannemora; William D. Garlock, Little Falls; Thomas F. Manley, Norwich; William T. Shanahan, Sonyea, and Carl G. Leo-Wolf, Niagara Falls, and delegates to the American Medical Association, Drs. Grover W. Wende, Buffalo; William F. Campbell, Brooklyn; Edgar A. Vander Veer, Albany; Henry L. Elsner, Syracuse; Floyd M. Crandall, New York City, and John O. Polak, Brooklyn. The oration in medicine was delivered by Dr. Victor C. Vaughan, Ann Arbor, president of the American Medical Association.

New York City

A Week Without Typhoid Mortality.—For the week ended April 24 not a death from typhoid fever was reported in the entire city. The only other week in the history of the Bureau of Records in which such a record was made was in 1909.

NORTH DAKOTA

State Board Approves Compulsory Vaccination.—At a meeting of the State Board of Health in Bismarck, April 3, the board decided to enforce to the letter compulsory vaccination for schoolchildren and to prohibit non-vaccinated children from attending school.

New Health Journal.—The North Dakota Antituberculosis Association has begun the publication of *The Pennant*, the initial number of which contains articles on the "Last Session of the North Dakota Legislature," "Antinarcotic Law," "Juvenile Health Crusade in England," "Ten Health Commandments" and "Causes that Kill Babies."

Hospital News.—Arrangements have been completed for the erection of a hospital for Kenmare to cost $25,000. The building will be able to accommodate fifty patients.——The new St. Alexius Hospital, Bismarck, opened to receive patients last month. Two floors of the building are already filled.

Personal.—Dr. William R. Shortridge, Flasher, who was operated on recently at St. Mary's Hospital, Rochester, Minn., has recovered and resumed practice.——Dr. and Mrs. Daniel H. Bell, Kenmare, have returned after several years abroad.——Dr. Joseph T. Newlove, Minot, has been appointed a delegate to the American Academy of Political and Social Science.——Dr. Alfred M. Call, Rugby, has been appointed vice-president of the State Board of Health.

OHIO

Must Report Ophthalmia of Infants.—The House of Representatives on April 15 passed the Deaton bill which requires that physicians report to local health authorities all inflammations of the eyes of newborn infants within six days. The bill carries the appropriation of $5,000 and 50 cents is to be paid for each report of a case.

Physicians Fill Pulpits.—Sixty physicians spoke from the pulpits of Cincinnati churches May 2, the day before the opening of the Ohio State Medical Association. The plans for the placing of the speakers were made by the religious work committee and the executive secretary of the Federation of Protestant Churches.

Carlson in Cleveland.—Professor A. J. Carlson of the University of Chicago, will address a joint meeting of the Alpha Omega Alpha chapter of the Western Reserve Medical School and Experimental Section of the Cleveland Academy of Medicine at the Medical Library, Cleveland, May 14, on "Some Recent Contributions to the Physiology of the Stomach."

Home from War Zone.—Drs. Samuel L. Ledbetter, Jr., William E. Lower, Leroy B. Sherry, Charles W. Stone, James N. Worcester and Edward F. Kieger, all of Cleveland, have returned home after a term of service in the American Ambulance Hospital, Paris.——Dr. George J. Roberts, Westminster, was seriously injured in a collision between automobiles, April 6.

Centralization of Medical Interests.—Plans are being made for the amalgamation of all physicians of Dayton into a common body and for the securing of a clubhouse where the various medical organizations, while not losing their individual identities, may still have a common meeting place and a center for scientific and research work. The societies included in the new organization are the Montgomery County Medical Society, Dayton Homeopathic Medical Society, Dayton Academy of Medicine, Dayton Medical Society and the Miami Dental Society.

Personal.—Dr. Clyde R. Kitsmiller, Fresno, has been appointed division physician for the Pennsylvania system with headquarters in Pittsburgh.——Dr. Jay S. McCullough has been appointed local surgeon for the Pennsylvania lines, west, at Wellsville.——Dr. Kachig H. Yeretzian, Columbus, has resigned after five years' service as staff physician at the Columbus State Hospital and will enter general practice in the city.——Dr. Edwin A. Hamilton, Columbus, who has volunteered for duty with the National Red Cross, sailed from New York, April 20, to take charge of the Red Cross Hospital at Gleivitz, Silesia.——Dr. William G. Zanting, Jefferson, who was operated on at the Ashtabula General Hospital recently, is convalescent and will soon resume practice.——On the eve of his departure for his new home in Chicago, Dr. Asher F. Sippy, Akron, was given a dinner by members of the medical profession of Akron, Barberton and Cuyahoga Falls. Dr. Charles E. Held, Akron, on behalf of the physicians present, presented Dr. Sippy with a gold watch.——Dr. Winfield S. Ritenour, Bellbrook, has been appointed assistant superintendent of the staff of the McClellan Hospital, Xenia, vice Dr. Frank R. Bailey, Xenia, resigned.——Dr. Harry H. Snively and party, Columbus, have reached Bergen, Norway, en route to Kiev, where they take charge of the Russian Red Cross Hospital.

Cincinnati

New Interns at the Cincinnati General Hospital.—Out of the class of sixty-one who took the examination for internship in the new Cincinnati General Hospital, 14 interns and 10 alternates were selected. Of the interns, 6 were graduates of the University of Cincinnati, 5 of Rush Medical College, 2 of Johns Hopkins University and 1 of Northwestern University. Of the 10 alternates, 7 were graduates of Rush Medical College, 2 of the University of Cincinnati and 1 of Northwestern University. The service is for one year and it is probable that some of the alternates will be needed to fill places in the house staff.

Personal.—Dr. John D. Spelman, captain, M. C., Ohio, N. G., has accepted an appointment under the American Red Cross for service in Belgium and sailed from New York, April 17. At a dinner given April 14, by the officers and men of the First Field Hospital, in honor of Dr. Spelman, he was presented with a gold wrist watch.——Dr. Edward H. Thompson, consulting physician to the German Protestant Orphan Asylum, resigned April 24.——Dr. John H. Berry, assistant superintendent of the Longview Hospital, has been appointed to a similar position at the State Hospital for the Criminal Insane, Lima.——Dr. Horace F. Tangeman, has been appointed eye, ear, nose and throat specialist at the Municipal Tuberculosis Sanatorium.——Dr. Peter A. Keck, one of the oldest practitioners of the city, is reported to be critically ill in the Cincinnati General Hospital.

PENNSYLVANIA

Appropriation Recommended.—The House Appropriation Committee on April 26 reports favorably on the bill appropriating $2,975,807 to the State Department of Health for the maintenance of the State Tuberculosis Sanatoriums and Dispensaries and $845,000 for the Polk Institution for the Feeble-Minded.

Personal.—Dr. Thomas H. Leidy, Reading, was run down by an automobile, April 26, and painfully injured.——Dr. James A. Carnes, Mt. Carmel, has been appointed superintendent of a hospital at Massillon, Ohio.——Dr. Amelia A. Dranga, Pittsburgh, has been elected treasurer of the Pittsburgh Woman's Medical Society succeeding Dr. Fannie Davis, resigned.——The summer home of Dr. Charles J. Hunt, Harrisburg, associate chief medical inspector, was entirely destroyed by fire April 23.

Optometrists Lose Fight.—On May 1 Governor Brumbaugh announced that he had vetoed the Daix optometry bill, which would establish a separate bureau to license optometrists, holding that he sees no reason why the practitioners should not place themselves under the State Bureau of Medical Licensure. The bill was one of the early ones presented to the legislature, having been introduced on February 8. It was passed in April and recalled from the governor for amendment on April 15. Five days later it was amended and passed.

Philadelphia

Banquet to Da Costa.—Dr. John C. Da Costa was the guest of honor at the annual banquet of the Northern Medical Society at the Hotel Walton April 27. Dr. Thomas Shriner presided as toastmaster. The speakers who praised the career of Dr. Da Costa as surgeon, educator and literary man included Drs. James Tyson and William H. Walsh.

Educational Bulletins Ready.—The *Health Bulletins* adopted by the Child Federation for the education of mothers and housekeepers are ready to be posted in the 350 places in the city. Iron bulletin boards have been erected and the first bulletin giving warning of the dangers to health by the fly menace is off the press. The bulletins, yellow in color and 18 by 24 inches in size, will take up one subject at a time.

Clean-Up Week.—Philadelphia's clean-up week, May 3-8, has been widely advertised. Posters of "Billy Penn" armed with a broom and urging a spick and span city were placed in all street cars and public places. During the week collections were made by the ash and rubbish men, extra teams, wagons and men being put to service by the Highway Bureau. The big corporations, including life insurance companies, recognized the full intent of what "clean-up week" means by advertising and personal appeals urging city-wide cooperation in the project. Monsignor McDevitt, director of the parochial schools, in a circular declared that the cordial endorsement of Clean-Up Week stimulated the personal interest of citizens in their city and made for efficient administration.

Woman's Medical College News.—Moving pictures illustrating the work of the Woman's Medical College will be exhibited in the Young Women's Christian Association Building at the Panama Pacific Exposition, San Francisco. These films take as their subjects the girl student as she enters college, following her through work and play to her graduation, and then depicts the busy woman physician in some of the emergencies she is called on to meet.——A subscription dinner was held in behalf of the Woman's Medical College of Pennsylvania at the Hotel Rittenhouse May 4. Mrs. William Ellis Lucans acted as toastmaster and address were made by Drs. William W. Keen and Edward E. Montgomery, and a letter of greeting from President Wilson was read.

SOUTH CAROLINA

State Sanatorium.—The Tuberculosis Hospital at State Park will have its two-story administration building and one ward completed and ready for occupancy early this month. The sanatorium has been erected at a cost of about $10,000, and the building thus far erected, will accommodate twenty patients.

Personal.—Dr. C. Frederick Williams, Columbia, resigned as a member of the State Board of Regents to accept the position of superintendent of the State Hospital for the Insane, Columbia, succeeding Dr. Thomas J. Strait, Lancaster, retired.——Dr. James E. Daniel, Greenville, has been appointed second assistant surgeon, Belgian Unit, No. 1, American Red Cross, and sailed for Europe, April 17.——Dr. Milton T. Edgerton, Jr., Greenville, N. C., has been elected whole-time health officer for Pitt County.——The office of Dr. George Y. Hunter, Prosperity, was destroyed by fire recently.

State Medical Society Meeting.—The sixty-seventh annual meeting of the South Carolina Medical Association was held in Greenwood, April 20 to 22, and the following officers were elected: president, Dr. Gottlob A. Neuffer, Abbeville; vice-presidents, Drs. Rufus B. Epting, Greenwood; J. J. Cleckley, Bamberg, and David A. Coleman, Blackstork, and secretary-treasurer, Dr. Edgar A. Hines, Seneca, reelected; councilors, first district, Dr. Archibald E. Baker, Charleston; third district, Dr. Miles J. Walker, Yorkville, and seventh district, Dr. Samuel C. Baker, Sumter. The following board of examiners was also elected: Drs. Joseph T. Taylor, Adam's Run; John Lyon, Jr., Greenwood; Ebenezer W. Pressly, Clover, and Joseph J. Watson, Columbia. The next meeting is to be held in Charleston.

CANADA

Special Medical Convocation.—A special convocation was held in the assembly hall of the new medical building of McGill University, Montreal, to confer the degree of M.D., C.M., on the students of the fifth year medical class, who are to be attached to the McGill General Hospital on the lines of communication.

Tuberculosis Clinic in New Brunswick.—Dr. David Townsend, superintendent of the Jordan Memorial Hospital, River Glade, N. B., visits Fredericton on the first Wednesday, St. John on the first Thursday and Moncton on the second Thursday of each month for the purpose of conducting clinics for tuberculosis in the interests of the sanatorium. These clinics are opened free of charge to anyone for opinion and advice regarding tuberculosis.

Personal.—Dr. John W. S. McCullough, Toronto, has been appointed assistant sanitary expert to the international joint commission on waterways and pollution of boundary waters.——Major Frank S. Patch, Montreal, commanding the fifth field ambulance, A. M. C., has been appointed acting assistant director of medical surgeons for the fourth military division with headquarters in Montreal, succeeding Lieut.-Col. H. B. Yates, Montreal.——Dr. John R. M. Collie, Jr., River John, Pictou, N. S., has returned home after three years abroad.——Dr. Darius A. Coon, Elgin, Ont., has been appointed medical superintendent of the Kingston General Hospital.——Dr. William G. Anglin, Kingston, Ont., who will be chief surgeon with Queen's University Stationary Hospital, which leaves for France shortly, has been granted the rank of lieutenant-colonel by the Canadian Militia Department.——One hundred additional Canadian doctors are being selected to go to England in response to another request from the War Office. When the second Canadian Army Division is at the front Canada will have about 300 surgeons and 450 nurses in England and France. There is still a waiting list of 1,200 nurses on file in the Militia Department at Ottawa.——No. 2 Casualty Clearing Hospital under command of Lieut.-Col. George S. Rennie, Hamilton, has gone abroad. Lieut.-Col. Alexander B. Osborne, Hamilton, retired officer, is second in command. In addition there are Drs. James E. Davey, Hamilton; Frank E. Wilson, Niagara Falls; George S. Strathy, Toronto; Harvey L. Jackes, Toronto; and Lawrence B. Robertson, Toronto. Lieut.-Col. John T. Fotheringham, chief medical officer of the Second Canadian Overseas Force, left Toronto last week for the front.——Drs. John A. Amyot and P. Walter H. McKeown, Toronto, with the University of Toronto Base Hospital which will soon leave for the front, were recently banqueted by a large number of friends and presented with wrist watches.——The president of the Academy of Medicine, Toronto, Dr. Harry B. Anderson, and the Council of the Academy, gave a banquet in honor of Lieut.-Col. James A. Roberts and the other members of the University of Toronto Base Hospital, April 6.——The following comprise the McGill Base Hospital which will leave for England in a few days: In command, Lieut.-Col. Herbert S. Birkett; second in command, Lieut.-Col. H. B. Yates; Drs. Edward W. Archibald, Harry C. Burgess, H. C. Browne, H. C. Dixon, John M. Elder, Wm. T. Ewing, Chemoinus, B. C.; William W. Francis, Arthur T. Henderson, W. Henry P. Hill, Donald A. Hingston, Campbell P. Howard, Ottawa; William B. Howell, J. Wm. Hutchison, David Law, Herbert M. Little, John McCrae, J. A. MacMillan, Laurie H. McKim, Ronald St. J. Macdonald, Port

Hood, N. S.; R. H. Malone, John C. Meakins, Revers Osler, Alexander H. Pirie, L. J. Rhea, Colin K. Russel, Lewis L. Reford, R. B. Robertson, A. Stevenson, L. H. Thornton, William G. Turner, J. C. Wickham, Walter A. Wilkins, J. L. Todd and F. W. Tidmarsh.——Among the 5,000 men recently in camp in Exhibition Park, Toronto, thirteen cases of cerebrospinal meningitis developed up to the end of March, the first case appearing February 8. Altogether seventy-two carriers were discovered and isolated in the old Toronto General Hospital. No cases developed among those men.——Dr. Andrew Macphail, Montreal, editor of the *Canadian Medical Association Journal*, has sailed for France with the Montreal Clearing Hospital.——Much sympathy is expressed in Toronto toward Dr. George A. Sterling Ryerson, president of the Canadian Red Cross Society, who is at present on a tour of inspection of hospitals in England and France, over the death of one son killed in the battle of Langemarck and another severely wounded.——Dr. Irving Heward Cameron, professor of surgery in the medical department of the University of Toronto, has resigned.——Dr. W. Harley Smith, for several years secretary of the Academy of Medicine, Toronto, and who has for several years acceptably filled the post of Italian consul in Toronto, has resigned that office.——Up to March 1, No. 2 General Hospital, operating in France under Dr. Wallace A. Scott, Toronto, had handled 13,000 patients.

GENERAL

Pediatric Society Meeting.—The American Pediatric Society announces its twenty-seventh annual meeting, to be held in Lakewood, N. J., May 24 to 26, under the presidency of Dr. George N. Acker, Washington, D. C.

Warning.—It is reported that a young man, claiming to be a member of the Coast Guard Service has victimized several members of the medical profession by passing worthless checks in Washington, D. C. and Baltimore.

Medico-Psychologists to Meet.—The seventy-first annual meeting of the American Medico-Psychological Association will be held at the Hotel Chamberlin, Fortress Monroe, Va., May 11 to 14, under the presidency of Dr. Samuel E. Smith, East Haven, Ind.

Meeting of Immunologists.—The second annual meeting of the American Association of Immunologists will be held in the New Willard Hotel, Washington, May 10, under the presidency of Dr. Gerald B. Webb, Colorado Springs, Colo. Morning, afternoon and evening sessions will be held.

Meeting of Gastro-Enterologists.—The eighteenth annual meeting of the American Gastro-Enterological Association will be held in Osler Hall, Medical and Chirurgical University, Johns Hopkins University, Baltimore, May 10, under the presidency of Dr. Joseph C. Bloodgood, Baltimore.

Academicians to Meet.—The American Academy of Medicine, a society for the study of questions of social medicine, will hold its annual meeting in the St. Francis Hotel, San Francisco, the Friday and Saturday before the meeting of the American Medical Association, under the presidency of Dr. Woods Hutchinson, New York City. The annual address will be delivered by Dr. David Starr Jordan, chancellor of Leland Stanford University, on "The Relation of Medicine to the Peace Movement."

Examination for Physiologists.—The United States Civil Service Commission announces an open competitive examination for physiologist, for men only, to fill a vacancy in the Dairy Division, Bureau of Animal Industry, Department of Agriculture, Washington, D. C., with a salary of from $2,500 to $3,000 a year. The examination is to be held June 8, and those who desire to enter should apply to the United States Civil Service Commission, Washington, D. C., or to the secretary of the United States Civil Service Boards at the cities at which the examination will take place.

Examination for Medical Corps of the Navy.—The next examination of persons desiring to enter the Medical Corps of the Navy will be held in Washington, Boston, New York, Philadelphia, Norfolk, Va., Charleston, S. C., Great Lakes (Chicago), Ill., Mare Island, Cal., and Puget Sound, Wash., on or about July 6. Candidates for appointment must be citizens of the United States, between 21 and 30 years of age, graduates of reputable schools of medicine and must apply for permission to take the examination. The application should be addressed to the Chief of the Bureau of Navigation, Navy Department, Washington, D. C., via the Surgeon-General, U. S. Navy.

FOREIGN

New President for College of Physicians.—Dr. Frederick Taylor, F.R.C.P., has been elected president of the Royal College of Physicians, succeeding Sir Thomas Barlow.

Donations from the Profession in Cuba to the French Red Cross.—A large committee of physicians in Havana has been busily engaged in soliciting donations for the work of the Red Cross in France. The *Revista de Medicina* states that tobacco has been donated in large quantities, so that 6,500 pounds of tobacco, 19,000 packages of cigarettes and five large boxes containing 11,300 "tabacos" have been forwarded, along with 164 bags of sugar, four bags of coffee and considerable rum and cash.

Death of Sir William Gowers.—Sir William Richard Gowers, M.D., F.R.C.P., F.R.S., eminent as a specialist on diseases of the nervous system, whose manual on that subject is a standard work and has been translated into many foreign languages; a frequent contributor to the literature in varied lines of medical research; member of many learned societies; consulting physician to the University College Hospital, London, and physician to the National Hospital for the Paralyzed and Epileptic; died May 4, aged 70.

Prize Offered by the Association of the Medical Press in Cuba.—The medical editors of Cuba keep in close touch with each other by means of occasional meetings to discuss subjects of mutual interest. At the April meeting it was decided to offer a prize for the best clinical work presented for publication before Oct. 1, 1915. The association also passed a resolution appealing to all physicians to discuss scientific matters in medical societies or in medical publications only, and refrain from discussing medical matters in the lay press, except, of course, matters of hygiene affecting the public health or for the education of the public in sanitary matters.

Deaths in the Profession Abroad.—Sir Thomas Smith Clouston, a well-known psychiatrist, died at Edinburgh, Scotland, April 19, aged 75. He married the daughter of William Storer of New Haven, Conn.——C. de Andrade, director of the Laranjeiras maternity at Rio de Janeiro and of the public clinic, aged 45.——M. Roth, professor of pathologic anatomy and later of the history of medicine at the University of Basel.——R. Ruberl, assistant medical director of a Vienna hospital, aged 37. He contracted typhus while tending the sick in one of the hospitals at Nish, Serbia, after he had been captured by the Serbians.——Another victim to typhus is H. Sprinzels, for many years assistant at the Vienna dermatologic policlinic.——R. Lederer of Teplitz, a young specialist in gastro-intestinal diseases, succumbed to a galloping pulmonary affection contracted during strenuous service in the eastern arena of war.——The death is also reported of the well-known ophthalmologist, Prof. L. Guaita, professor of ophthalmology at the University of Florence and director of the eye clinic, aged 64. He was associate editor of the *Annali di Ottalmologia* and many of his works on ophthalmologic topics have been translated into various languages. ——P. Guimarães, formerly professor of surgery at the University of Rio de Janeiro, and of the highest grade in the medical corps of the navy, ranking as admiral.——P. Strübing, professor of internal medicine at the University of Greifswald, aged 62.——H. Hammerl, professor of hygiene at the University of Graz, succumbed recently to smallpox, aged 48.

WAR NOTES

New Red Cross Manager.—On May 1, Brig.-Gen. Carroll A. Devol, Q. M. C., U. S. Army, was detailed for service as general manager of the American Red Cross.

Antitetanus Serum Successful.—In a letter from Sir William Osler it is stated that wounded soldiers in English hospitals have recovered from tetanus after treatment of the serum developed from a formula used in animal experimentation in Johns Hopkins Medical School, Baltimore.

Personal.—Dr. William Jason Mixter, of the Massachusetts General Hospital, is on duty with the Harry Payne Whitney Hospital at Juilly, France. This hospital is known as Hospital B of the American Ambulance.——Dr. Charles S. Pancoast, Camden, N. J., has been given the position of assistant to Dr. Dollinger at the Royal Hospital, Budapest.

Sterilizing Motor Cars Needed.—In response to an appeal sent from the French Red Cross for sterilizing motors for disinfectants in and around battlefield hospitals, the American Red Cross expects to be able to furnish the money for one of these especially equipped automobiles. The American Red Cross has contributed from its contingent fund, $1,000 of the $2,000 required. Mrs. Levi P. Morton has contributed

$500 and Mrs. George C. Lodge is undertaking to raise the remaining $500.

Reenforcements for the War Zone.—On steamers which sailed from New York May 1, the following Red Cross surgeons were dispatched for service in the war zone: for Serbia, Drs. Shadworth O. Beasley, San Francisco, and William A. Jolley, Boulder, Colo.; for Vienna, Dr. Walpole C. Brewer, Tuskogee, Ala., and for England, Drs. Dunlap P. Penhallow and Herbert H. Howard, both of Boston. The two latter have been assigned to duty at the Paignton Hospital.——By the same steamer, eight trained nurses were sent to Austro-Hungary, four to Germany, five to Serbia and one to England, to take the place of other nurses whose term of service has expired.

Supplies Received.—Sir William Garsten, chief of the supply division of the British Red Cross, writes from London, April 16, acknowledging receipt of 236 cases of stores sent by the American Red Cross.——Dr. V. M. Soubititch, vice president of the Serbian Red Cross, acknowledges receipt of gifts sent by the steamers *Finland* and *Earl of Elgin*.——The American Red Cross shipped on the steamer *Canopic*, from New York, May 1, 353 cases and bales of hospital supplies to the Austro-Hungary Red Cross in Vienna, Austria, the shipment being sent in care of the United States consul at Genoa, Italy.——On the same day, on the Holland-American steamer *Rotterdam*, twelve cases of war relief supplies were shipped to the American minister at the Hague, Holland.——Acknowledgment is made of the receipt of eight cases sent to the American Red Cross Hospital at Pau, France.

The Work Against Typhus in Serbia.—An international board of health has been organized at Nish, Serbia, to cope with the plague of typhus. The president of this board is Prince Alexander of Serbia; vice-president, Sir Ralph Paget of England; and medical director, Dr. Richard P. Strong, Boston, head of the American Commission. The members of the board include the heads of French, Russian and English sanitary commissions and representatives of the civil and military medical departments of Serbia and Skopelje members.——Dr. Strong appeals for at least twenty-five more physicians and medical inspectors and a large quantity of disinfectant cholera vaccine, ten large field autos, and ten Ford motor trucks. The board also needs an experienced sanitary engineer. Dr. Strong also asks for the services of 150 physicians, inspectors and fourth year medical students for the Serbian government. The remainder of the American Commission has reached Saloniki, Greece, and will shortly join Dr. Strong in Nish.

Aid for Belgian Physicians.—In a letter just received by a member of the Committee of American Physicans for the Aid of the Belgian Profession, Dr. Jacobs, Brussels, summarizes the situation of our Belgian colleagues. Many doctors have been killed, and the widows and orphans have been deprived of everything, are without a home and without means. All country doctors or those living in small towns are ruined by loss of every possession they had. Many doctors in large cities are ruined by commandeering, war levies, etc., and a large part of the Belgian population has become the prey of infectious diseases and epidemics, with a large infant mortality. Ruined civilian populations cannot pay for medical advice, consequently many physicians are working for nothing, others are obliged to undertake any labor for gain as a means of livelihood. The opportunity is here created for the medical profession to show the brotherly feeling which exists by helping with the necessary funds. The report of the treasurer for the week ending May 1, 1915, lists the following contributions:

Dr. N. D. Murphy, Bangor, Mich.	$ 25.00
Col. W. H. Arthur, M. C., U. S. A., San Francisco, Cal.	10.00
Dr. Augustus A. Eshner, Philadelphia, Pa.	10.00
Dr. S. W. Goddard, Brockton, Mass.	10.00
Dr. Albert M. Judd, Brooklyn, N. Y.	5.00
Dr. Calvin F. Barber, Brooklyn, N. Y.	10.00
The Mount Vernon Medical Society, Mount Vernon, N. Y.	10.00
Receipts for the week ending May 1	$ 80.00
Previously reported receipts	6,505.50
Total receipts	$6,585.50
Disbursements for the week ending May 1:	
Thirty-five standard boxes of food at $2.30	$ 80.50
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
Total disbursements	$6,585.70
Deficit	$ .20

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

LONDON LETTER

LONDON, APRIL 16, 1915.

The War

THE HEALTH OF THE ARMY IN FRANCE

According to the report of Sir John French, commander of the British forces in France, the general health of the army is excellent, typhoid fever has decreased and there has been no recurrence on any appreciable scale of the "foot trouble" (gangrene due to exposure to wet and cold in the trenches already described in THE JOURNAL). The latter result is attributed to close supervision of the men, seeing that the precautions advocated, such as not wearing too tight boots, or standing too long without exercise, are duly observed, and the establishment of bathing places and wash houses to enable the troops to maintain cleanliness with their bodies and clothing. Sir John French particularly commends the energy displayed by the medical corps in their efforts to discover and check disease in its earliest stage by a system of experimental research which has never before been so thoroughly developed in the field. In this they are aided by distinguished specialists of the civil profession, who are now employed as military medical officers. Another improvement is the establishment of "convalescent hospitals" near the fighting line, where slight wounds and mild ailments are treated. By this means efficient soldiers whose services would otherwise be lost for a long time are kept in the country, while a large number of men are given immediate relief and rest when required without removing them from the area of operations. The arrangements for the treatment of the wounded are also commended. "No organization could excel the efficiency of the arrangements—whether in regard to time, space, care and comfort, or transport—which are made for the speedy evacuation of the wounded."

THE HEALTH OF THE ARMY AT HOME

The most cordial cooperation exists between the military and civil health authorities in the care of the large number of troops of the new armies in this country. Health officers of counties have been ordered to obtain from district health officers each week information of the occurrence of any military cases of any infectious disease which comes under their notice and of any movement of troops into and out of their districts. In view of the occurrence of sporadic cases of cerebrospinal meningitis in various parts of the country, arrangements have been made for the attendance of bacteriologists when required and the examination of material from contact cases.

A HOSPITAL TRAIN DE LUXE

The latest thing in hospital trains is the "Princess Christian Hospital Train," so called after the lady to whose energy and imagination it owes its being and by whom the necessary funds have been collected. It has been described as more than a hospital on wheels—a traveling hotel for sick men equipped with all the comforts of a private nursing home. The train consists of fourteen coaches, is one-sixth mile long and is painted a light gray. Inside white paint has been used almost exclusively so that absolute cleanliness may be assured—a matter of supreme importance where there are open wounds to be tended. The first coach contains an office for the quartermaster-sergeant, provided with bed, desk, safe and wash basin. Immediately behind this apartment is the first ward, with beds for thirty patients. These beds are specially designed. It is possible to lift them from their attachments to the wall of the carriage, and to use them stretcher fashion. A patient can thus be put into his bed outside the train and taken, in his bed, to the hospital when the journey is ended. By this means the great difficulty of lifting a heavy man to a "top bunk" is dispensed with and the pain which a patient with a broken bone or a severe wound would be bound to suffer during the lifting process is eliminated. Each bed, too, is fitted with a wooden top-piece to prevent the pillows falling off and to afford support to the pillows, and so to the patient's head. Each bed has a little table attached, placed crosswise over the patient's knees, and a fixture for a cup and tumbler. The latter enables a sick man to keep water or other drinks beside him during the night. These ward-coaches have linoleum floor coverings and are equipped with wash basins which can be folded up when not in use. They are lighted both with gas and electricity and have, in addition, candle fittings for emergency use. Roomy lockers have been fitted in each of the four corners of the coaches. The

first three and the last two carriages of the train are devoted to the patients. In the central two carriages the staff is accommodated. There are sleeping rooms for the nurses, heavily curtained off from the central passages, dining rooms for nurses and doctors, an office with sleeping accommodation for the chief medical officer, and sleeping rooms for the other doctors. There are also a large and convenient linen room, a fully equipped surgery and dispensary and two kitchens with good serviceable ranges. In addition, four extra couches have been designed for patients capable of sitting up. The train is steam-heated throughout, and for all general purposes each ward-carriage is a separate unit, having drinking water and service tanks of its own. The beds and bedding are especially attractive, and, indeed, equal in quality and comfort to those of any first-class hotel.

The Manufacture of Salvarsan Products

With the cutting off of the German supply of salvarsan products, these drugs are being manufactured in this country. The Board of Trade has suspended the patents of salvarsan and neosalvarsan and granted a license to Burroughs Wellcome & Co. for the manufacture of these preparations, which they sell under the names of kharsivan and neokharsivan, and to the Société anonyme des établissements Poulenc Frères of Paris for the sale in Great Britain of the same products under the names of arsenobenzol-Billon and novarsenobenzol-Billon. According to a report issued by the National Medical Research Committee (which, it may be remembered, was established under the insurance act), although the manufacturers have in both instances adopted distinguishing trade names for their preparations, the latter are not merely substitutes for, but are chemically identical with salvarsan and neosalvarsan, differing in no known respect from Ehrlich's original products, either in their final constitution or in the details of their preparation. The proof of such absolute identity, is, however, in the case of these substances, a matter not only of great importance, but also of unusual difficulty. Salvarsan is a highly reduced substance. If the reduction, which constitutes one stage of its manufacture, is carried out with insufficient vigor, or if the product is later exposed to the danger of oxidation by contact with air, it is readily contaminated with a much more toxic oxidation product. The water-soluble derivative neosalvarsan is even more liable to this defect. It is impossible, by the most careful procedure, altogether to exclude the presence of the more toxic oxid; but the best specimens, from any source, contain it in the proportion of about 0.5 per cent., and it is an obligation resting on the manufacturer to see that no batch of his product contains it in an unsafe proportion. According to Ehrlich, the proportion varies from 0.5 to 0.8 per cent. in good specimens. If the presence of an excess of this easily recognizable and determinable oxid were the only source of difficulty or danger, a chemical standard of purity, on similar lines to many in the pharmacopeia, could easily have been defined and enforced. Unfortunately there are indications that other toxic products, of unknown constitution, may arise through uncontrollable accidents of preparation. The presence of these is indicated only by the fact that the toxicity of the salvarsan products cannot be accounted for by the percentage of the known toxic oxid which they contain. While, therefore, the determination of the latter is a necessary safeguard, it can be regarded only as a preliminary precaution, and the final appeal, in the present state of knowledge, must be to animal experiment, the result of which gives evidence of the total toxicity from whatever source it comes. The license in both the cases mentioned was, therefore, granted, subject to the condition that all samples of these drugs sold in this country should be submitted to biologic tests by an approved authority. The committee entrusted the details of the work to most competent pharmacologic workers, who took as a basis for the biologic control, supplementing the chemical tests of the manufacturer, the methods and standards which had previously been found adequate in Ehrlich's institute. It was decided, accordingly, that specimens should be passed as satisfactory, under the official certificate of the committee, which were not more toxic to mice than the average sample of German manufacture. This decision has involved the rejection of some samples which exhibited no greater toxicity than some of those previously issued in this country with Ehrlich's authority, and used therapeutically without adverse result. In addition, however, to this application in all cases of the official German test, every sample has been further tested by the intravenous injection into a rabbit of a large dose only slightly less than that which may be expected, according to Ehrlich's publications, to be lethal for the animal. The object of this test was to guard against the presence of any immediate toxic constituent which might escape detection when doses were given hypodermically to mice. In the opinion of the Medical Research Committee, the experimental work which has been done under its direction has already shown that the problem of the successful manufacture of the salvarsan compounds in England and France has been solved.

An Inquiry Department of the British Red Cross

According to the official announcement, the number of British casualties in this terrible war, which Britain is in a sense only beginning, amount to 139,000. Among the afflictions of the friends and relatives of those who have gone to the front, greater even than the grief of loss, is the suspense when some soldier has disappeared of whom nothing can be heard. It is not known whether he is alive and well, wounded or dead. In order to deal with this problem, the British Red Cross has established an inquiry department which is doing most excellent work. The cases are divided into three main categories: soldiers who have disappeared and whose friends are unable to learn anything about them; soldiers who have been reported wounded, and soldiers who have been reported missing. There is a fourth category for inquiries concerning the whereabouts of the graves of men who have fallen. The bureau has important centers in Boulogne, Paris, Rouen and Havre. There are also workers in most of the smaller towns in northern France, who are supplied with lists of names of "wanted" men. They watch the arrivals at the hospitals carefully and are afforded facilities for getting into touch with them. Often a wounded man is able to say that he saw the soldier who is being looked for at the front, or that he was near when he was wounded and thinks the patient may have been taken to such and such a dressing station, or that he saw him fall and knows where he is buried. Information thus obtained is sent to one of the centers and there compared with reports which may have been received from other workers. Searchers appointed by the bureau then proceed to act. They go to the places named and make full inquiries of the hospital and other authorities; if need be they follow the case down the lines of communication, and in a great number of cases finally get into touch with the missing man. The central office in London is then informed and the anxiety of friends relieved.

PARIS LETTER

PARIS, April 15, 1915.

The War

REORGANIZATION OF THE ARMY MILITARY SERVICE

The minister of war has just introduced certain reforms in the army military service. These reforms concern at the same time the general organization of the service and the personnel. The interior of France is divided, from a military point of view, into twenty-one districts. Until now, some of these districts were grouped and reunited under a single control from the point of view of the medical service, but each one of these districts will be hereafter provided with a surgeon-general inspector (rank corresponding to that of general of a division) or a surgeon inspector (rank corresponding to the general of a brigade).

On the other hand, Dr. Février, who was director of the medical service of the military government of Paris, is succeeded in this position by Dr. Dziewonski, medical inspector. He is charged with the general inspection of the fourth district (Le Mans). Dr. Vaillard, who was director of the technical committee of health, is charged with the general inspection of the district of Paris.

THE WAR AND SCIENTIFIC MEETINGS OF ARMY SURGEONS

In a preceding letter (THE JOURNAL, Jan. 30, 1915, p. 451) the scientific activity of army surgeons in certain centers, particularly at Bordeaux was noted. An important center for scientific meetings of army surgeons is Amiens. The institution of these is due to Dr. Monprofit, surgeon and professor at the surgical clinic at the preparatory school of medicine and surgery at Angers. It dates from the end of September or the first of October; that is a date very near to the liberation of the city of Amiens. Since this date the meetings have not ceased to take place every Saturday under the presidency of Professor Monprofit. The number of army

surgeons who are present has increased and the most prominent army surgeons of the district honor them by their presence and their effective participation. The subjects treated are sometimes clinical, sometimes surgical, but most frequently the latter.

INDUSTRIAL EDUCATION OF THOSE BLINDED BY THE WAR

Under military authority, M. Brissac, director of public aid and hygiene of the Department of the Interior, has decided that all blinded by wounds in war, as soon as they are cured of their wounds, shall be directed under the title of convalescents, to an annex of the noted national hospital, Quinze-Vingts at Paris. This annex, created for the purpose, will bear the name of "Maison de convalescence de la rue de Reuilly." The stay in this hospital will only be temporary. When the blind man has learned a trade, efforts will be made to replace him in the neighborhood where he lived before the war and where it is to be hoped he will be able to take root. The expenses will be borne by the Department of the Interior and by the hospital of Quinze-Vingts, aided by the war department. But in order to give opportunity to extend their efforts, the founders of the Maison de convalescence have created, under the patronage of the ministers of the interior and of war and under the presidency of M. René Vallery-Radot, the son-in-law of Pasteur, a private society "les Amis des soldats aveugles" (the Friends of Blind Soldiers) thanks to which they hope to successfully arm these victims of the war for life by aiding them to reconstitute their existence themselves and to build their own hearthstone.

On the other hand, the "Association Valentin-Haüy pour le bien des aveugles," which in all France has charge of about 7,000 blind persons, from the beginning of the war placed itself at the disposal of the government to take care of our soldiers who should lose their sight. At present, it is teaching a certain number of them, as all who have occupied themselves with the blind have concluded, in which opinion M. Vaughan, who was also director of the national hospital of Quinze-Vingts, coincides, that there does not exist, so to speak, a career fatally and irrevocably closed to the blind. In fact, there are reckoned among them eminent men. Some of them have occupied high positions; others have distinguished themselves in letters, in the sciences and in the arts. The loss of sight does not take away from those who suffer it any of their intellectual activity. It does not take away from them, moreover, the power of adapting themselves to the most varied functions. Many of them who must secure their living by manual occupation learn the trade of bottomers and recaners of chairs, of broom makers and basket makers, some become typographers or typewriters, some, taking advantage of the delicacy of their hearing, make excellent piano tuners; others, following the example which has been brought us from the extreme east, study massage and prove skilful practitioners.

ANTIALCOHOLIC MOVEMENT IN THE ARMY

With the approval of the commanding general, the commander of the army of the Vosges has forbidden, in the territory occupied by his troops, the circulation, purchase and sale of alcohol and alcoholic drinks, including *vins de liqueur* and brandied fruits. Very severe penalties, amounting to bringing the offender before a courtmartial, will be visited on those violating this regulation.

The Struggle Against Depopulation

At one of the last sessions of the Academy of moral and political science, the following statement was adopted on motion of M. Imbart de la Tour:

Considering that the lowering of the birth rate cannot be attributed solely to economic causes but to moral causes, and that the measures taken by the law will run the risk of being inefficacious without acting on the ideas and morals, the academy expresses its opinion that (1) the most energetic effort should be given to measures whose purpose is to preserve the morality of youth, the stability of the family, to facilitate marriage among young people, and that these efforts should be favored by the care of public authorities; (2) all the forces of religion, intellectual or moral, churches, schools and popular educational societies should combat by an energetic propaganda, the social curse which threatens the existence even of the nation.

The academy has also expressed the opinion that in revision of laws governing election, a larger number of votes should be granted to the heads of families than to celibates in consideration of the number of children.

Creation of the Municipal Health Office

On motion of M. Ambroise Rendu, the municipal council of Paris is considering the project of creating a municipal office of health of an autonomic character endowed with the necessary means for keeping the overpopulated and insalubrious quarters of the city in a sanitary condition. M. Ambroise Rendu is inspired with the American institution, the board of health, which has full power in matters of health and which watches over everything which concerns public hygiene. This organization, he says, has succeeded in lowering by 3 per cent. the death rate of New York. In Paris, M. Ambroise Rendu hopes to obtain an annual gain of 8,400 inhabitants. To secure this, there is needed an independent office because the administration with its complicated machinery would not have the necessary initiative to find practical and economic solution of the questions involved. There is needed a bureau with power to borrow money, make contracts and acquire property and even buildings. This municipal office of health will include four municipal councilors, two physicians, two architects, two engineers and two building contractors.

BERLIN LETTER

BERLIN, April 6, 1915.

The War

AFTER-TREATMENT OF WAR INJURIES AND DISEASES

On this important subject, the central committee for graduate work in Prussia has instituted a series of lectures in Berlin to which noted authors from abroad have been invited. Professor Kraus, who has been serving in the West as consultant for internal medicine since the beginning of the war and now has been given a furlough of a few days for personal reasons, reported on the experiences which he has had with reference to heart disease during the war. According to his idea, there is no specific war heart. Reasons for disease of the heart are variations of blood pressure, congestions, overexertion and infection. Acceleration of the heart action is extraordinarily frequent. Murmurs have only slight diagnostic value. The determinations of blood pressure and roentgenograms are important for forming a judgment. By means of the latter, the so-called bullet heart was often observed, and among weakly individuals the so-called drop heart. One should pay close attention to the blood pressure in those convalescing from typhoid in order that severe disturbances of the circulation may not result from premature dismissal of the patients. On the other hand, wounded and sick soldiers should not be left too long in their homes because they may easily become effeminate.

Professor Moritz of Cologne reported on diseases of the lung. The most important diseases of the lung are pneumonia and pleurisy, but tuberculosis also is frequently observed, partly because slight changes are overlooked at the time of enrolment which are aggravated by fatigue and exposure, and less frequently because quite latent foci are brought into activity from the same influences.

According to the experience of Professor Finder of Berlin in the field of nose and throat diseases there are no special war affections, but there are frequent disturbances; for instance, stoppage of the nose is more notably unpleasant in soldiers than in time of peace. Frequently there are recurring catarrhs under unfavorable weather conditions, and in this respect the diseases of the accessory cavities are especially unpleasant.

Prof. Adolph Schmidt of Halle emphasized the fact that frequently severe gastro-intestinal disturbances may develop under emotional and psychic stress. Most frequently, hypacidity, motor insufficiency of the stomach and acute intestinal catarrh are observed. For catarrhal diseases he recommends, among other things, kaolin or bolus and animal charcoal. Gunshot wounds may cause abscesses and chronic stenosis in the gastro-intestinal canal.

According to Professor Richter of Berlin, nervous excitement and injury in war may provoke or aggravate diabetes. In nervous glycosuria antidiabetic measures are not indicated, but treatment for neurasthenia. Genuine traumatic diabetes is very rare. Frequently trauma plays a rôle in gout, in addition to exposure, excitement and fatiguing marches, which may often develop an acute attack of gout. As a result of frequent psychic stress, acute exophthalmic goiter has been observed among the soldiers.

Among skin diseases, according to Professor Blaschko of Berlin, scabies and pediculosis play the chief rôle, together

with the possibility that occasional cases of leprosy may be met in the East. Venereal diseases are widespread in the East and the West, although not to the extent reported in the foreign press. The reason for this is the defective campaign against venereal diseases in Belgium, France and Russia.

Professor Weintraud of Wiesbaden said that it is notable that neither articular rheumatism nor other diseases of the joints are especially frequent in the present war. Acute articular rheumatism must be sharply distinguished etiologically from muscular rheumatism; in the former, infection is to be regarded as the cause, in the latter, exposure. In the first, angina plays a rôle. In fact, this disease is remarkably rare and of a mild course in the present war.

According to the investigations of Professor Alt of Uchtspring, the number of cases of mental disease appearing in the present war is small. In many psychoses, improvement has set in; in others, relapses have been observed. It is worthy of note, he added, that among the French prisoners a positive Wassermann reaction was obtained in 80 per cent. of the cases of psychoses.

The Total Mortality of Tuberculosis and Cancer in Prussia in 1913

Tuberculosis has shown a further reduction of mortality in Prussia in 1913. There died from this disease in 1913, 56,583, as opposed to 59,911 in 1912, that is, 3,328 less. Computed per ten thousand living, these figures are 13.59, as compared with 14.58 in 1912.

The deaths from cancer in 1913 were altogether 30,742, as compared with 30,045 in the previous year; that is, 697 more. Computed per ten thousand living, these figures are 7.38, as compared with 7.32 in the year 1912.

Physicians and Wage Earners' Insurance

The Berlin agreement of Dec. 23, 1913, which terminated the threatened conflict between the physicians and the Krankenkassen, has now led to a further agreement between the representatives of the insurance societies involved and the Leipzig League. It refers to satisfying the claims of those physicians who were employed as emergency medical officers by the societies during the period of conflict with the physicians. The parties to the contract agree, with the assistance of the government, on the immediate release of these physicians from their activity as insurance physicians, to make provision for the support in other ways of the physicians whom the insurance societies imported from outside during the difficulties with reference to contracts and with whom they have made legal contracts, and to secure the closing of these contracts as soon as possible, and to satisfy the necessary demands resulting from them. The discharged emergency assistants are to be treated in accordance with the principles of medical ethics.

Marriages

ROBERT H. MCDONALD, M.D., Manchester, Ga., to Miss Carobel Glover of Macon, Ga., at Warm Springs, Ga., April 11.

CLAUDE EVERETT RICHMOND, M.D., to Miss Bernice Marlowe Hosman, both of Colorado Springs, April 29.

HARRY F. EMERT, M.D., Sarles, N. Dak., to Miss Edith Pearl Ferris of Lakota, N. Dak., April 6.

CHARLES RICHARD LOCKWOOD, M.D., Kankakee, Ill., to Miss Mary Elsie Curry of Chicago, April 24.

FREDERICK A. STEELE, M.D., Oakland, Cal., to Miss Harriet N. Martin of Fresno, Cal., April 15.

FRED WILLIAM PHILLIPS, M.D., Battle Creek, Mich., to Miss Louise E. Pilon of Detroit, April 14.

WALTER C. LAMBERT, M.D., Wyandotte, Mich., to Miss Jennie Leece of Detroit, April 15.

GEORGE WASHINGTON BAKER, M.D., to Miss Martha Robertson, both of Leon, Okla., recently.

SAMUEL M. GREEN, M.D., Dixon, Ill., to NELLIE E. GREEN, M.D., of Fowler, Ind., recently.

AUSTIN ALBERT HAYDEN, M.D., to Miss Mary Phillips, both of Chicago, April 28.

DILLARD WATTS, M.D., to Miss Emma Garriey, both of Laverne, Okla., recently.

Deaths

James Henry Ford, M.D. Indiana Medical College, Indianapolis, 1872; a Fellow of the American Medical Association; professor of surgery in the Indiana University School of Medicine, Indianapolis; president of the Indiana State Medical Association in 1897 and for two terms president of the International Association of Railway Surgeons; for nearly thirty years chief surgeon of the Big Four system, Peoria and Eastern, and Cincinnati Northern railways; president of the Board of Health and Charity of the City of Indianapolis; surgeon to St. Vincent's and the Indianapolis City hospitals; one of the most prominent surgeons of Indianapolis; died at his home in that city, April 21, aged 67.

James Wilkes O'Neill, M.D. University of Pennsylvania, Philadelphia, 1877; mayor of Bergenfield, N. J.; for twenty-seven years brigade surgeon in the National Guard of Pennsylvania; a charter member of the American Red Cross and at one time editor of the *Pennsylvania Red Cross Journal;* president of the New Jersey and New York Bridge Association; died at his home in Bergenfield, April 25, after a long illness which followed the amputation of his left leg.

William Winslow Ogden, M.D. University of Toronto, 1860; for forty-four years a member of the Toronto Public School Board and from 1906 to 1911 a member of the Board of Education of Toronto; lecturer on medical jurisprudence and toxicology at the Toronto School of Medicine from 1869 to 1887; and thereafter professor of forensic medicine in the University of Toronto; died at his home in that city, April 22, from heart disease, aged 77.

Alexander H. Small, M.D. University of Pennsylvania, Philadelphia, 1881; of Riverside, N. J.; a Fellow of the American Medical Association; one of the founders of, and chief surgeon to the Zurbrugg Memorial Hospital, Riverside, N. J., and chief surgeon to the Burlington County Hospital, Mt. Holly; died suddenly in a hotel in Atlantic City, April 20, from heart disease, aged 54.

John Miller Faison, M.D. University of Virginia, Charlottesville, 1884; a member of the Medical Society of Virginia; formerly a member of congress from North Carolina; died in his home in Faison, April 21, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent while despondent on account of ill health.

Frank Huske Holmes, M.D. University of Maryland, Baltimore, 1895; of Clinton, N. C.; a Fellow of the American Medical Association; formerly president of the Sampson County (N. C.) Medical Society; major and surgeon, N. C. N. G.; superintendent of health of Sampson County; died in a sanatorium in Asheville, N. C., April 18, aged 45.

William Rauch, M.D. Eclectic Medical Institute, Cincinnati, 1882; formerly president of the Eclectic State Board of Medical Examiners of Pennsylvania; one of the organizers and president of the Johnstown Hospital Association and twice a member of the common council of Johnstown; died at his home, April 19, from nephritis, aged 55.

Charles Franklin Creveling, M.D. Bellevue Hospital Medical College, 1887; for several years town physician and a member of the town council of Phillipsburg, N. J.; died at his home, April 19, from the effects of a gunshot wound of the head, self-inflicted, it is believed, while despondent on account of illness with nephritis, aged 52.

Edward F. Sheehan, M.D. Albany (N. Y.) Medical College, 1888; a member of the Medical Society of the State of New York; physician to the Ossining (N. Y.) Hospital and during two administrations a member of the staff of the state comptroller; died at his home in Ossining, April 25, from heart disease, aged 53.

Mason Wilbur Gray, M.D. University of Michigan, Ann Arbor, 1880; a Fellow of the American Medical Association, first president of the Pontiac (Mich.) Medical Society and a charter member of the Oakland County Medical Society; formerly mayor of Pontiac; died at his home in that city, April 14, aged 59.

Lewis A. Perce, M.D. Eclectic Medical Institute, Cincinnati, 1882; local surgeon at Long Beach, Cal., for the Salt Lake Railroad; president of the National Eclectic Association in 1907, and professor of diagnosis in the California Eclectic Medical College; died at his home in Long Beach, April 8, aged 61.

John W. Lindsey, M.D. Medical College of Ohio, Cincinnati, 1891; of La Grange, Ohio; a member of the Ohio

State Medical Association; while crossing the tracks of the Big Four Railroad between Grafton and La Grange in his automobile, April 16, was struck by a train and instantly killed, aged 61.

Matilda L. Towsley, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1869; a member of the Michigan State Medical Society and a pioneer woman practitioner of Kalamazoo, Mich.; died at her home in Kalamazoo, April 20, after a long illness, the result of an accident several years ago, aged 84.

Eugene T. Oliphant, M.D. University of Pennsylvania, 1875; a retired practitioner of Bridgeport, N. J.; died in the Cooper Hospital, Camden, N. J., April 12, from cerebral hemorrhage, said to have been superinduced by a fractured leg sustained in a fall at his home in February, aged 66.

Luther Johnson (license, years of practice, Indiana, 1897), a member of the Indiana State Medical Association; a veteran of the Civil War and a practitioner of Bourbon, Ind., since 1866; secretary of the Board of Health of Bourbon; died at his home, April 17, from acute gastritis, aged 78.

John Forthune Eaves, M.D. University of Nashville, Tenn., 1887; acting assistant surgeon, U. S. P. H. S., at Frontera, Mexico; for several years a state quarantine officer of Texas, in charge of the Galveston Quarantine Station; died at his station in Frontera, Mexico, April 18, aged 49.

Lorenzo N. Phinney, M.D. Geneva (N. Y.) Medical College, 1866; a Fellow of the American Medical Association; assistant surgeon of the One Hundred and Ninety-Third New York Volunteer Infantry during the Civil War; died at his home in Wappingers Falls, N. Y., April 20, aged 74.

Charles L. Edwards, M.D. Missouri Medical College, St. Louis, 1886; a member of the Kentucky State Medical Association; practitioner and twice mayor of Sebree, Ky.; died suddenly from heart disease, April 12, while making a professional call about two miles from his home, aged 51.

Thurman Cecil Siffert, M.D. Cleveland College of Physicians and Surgeons, 1900; of Canton, Ohio; a member of the Ohio State Medical Association and president of the Canton Medical Society; died in Engleside Hospital, Canton, April 25, from acute yellow atrophy of the liver, aged 46.

Wilbur T. Cherry, M.D. Ohio Medical University, Columbus, 1898; a Fellow of the American Medical Association, and a prominent practitioner of McArthur, Ohio; died in the Grant Hospital, Columbus, April 12, two days after an operation for appendicitis, aged 45.

Charles Hamant Harwood, M.D. Harvard Medical School, 1892; for many years connected with the Boston Dispensary; who was actively interested in detective work and criminal investigation; died at his home in Boston, April 11, from pneumonia, aged 51.

Albert Griffin, M.D. University of Louisville, Ky., 1865; of Hawesville, Ky.; a member of the Kentucky State Medical Association and secretary of the Board of Health of Hancock County, Ky., in 1893; died at the home of his son in Lewisport, Ky., April 12, aged 75.

Carl Augustus Ludwig Schulin, M.D. University of Leipzig, Germany, 1873; for thirty years a practitioner of Montana, making a specialty of the eye and ear, and of late years a resident of Billings; died in St. Vincent's Hospital in that city, April 8, aged 64.

Homer V. Oldfield, M.D. Homeopathic Medical College of Missouri, St. Louis, 1880; a retired practitioner of Philadelphia; aged 65; was struck by a trolley car while crossing the street, April 15, sustaining injuries from which he died a short time later.

Preston Emmette James, M.D. Vanderbilt University, Nashville, Tenn., 1893; formerly a member of the Kentucky State Medical Association; was found dead in his home in Morgantown, Ky., April 10, from the effects of an overdose of chloroform, aged 46.

Walter Ure, M.D. College of Physicians and Surgeons, in the City of New York, 1866; assistant surgeon of volunteers during the Civil War and a practitioner of Northside, Pittsburgh, Pa., for more than forty years; died at his home, April 16, aged 82.

William C. Lenhart, M.D. Medical College of Ohio, Cincinnati, 1870; for more than sixty-five years a practitioner of medicine of Zanesville and Columbus, Ohio; died at the home of his daughter in Columbus, April 21, four days after a fall, aged 85.

Alonzo Potter Bowie, M.D. Philadelphia University of Medicine and Surgery, 1868; a well known homeopathic practitioner of Uniontown, Pa.; died in the East End Homeopathic Hospital, Pittsburgh, April 15, from a nervous breakdown, aged 68.

Thomas Carlyle Doolin, M.D. Washington University, St. Louis, 1911; of Ash Grove, Mo.; while attempting to board a train in motion at Ash Grove, February 20, was thrown to the ground, dislocating his neck, and died instantly, aged 27.

Bertrand J. Andrews, M.D. University of Vermont, Burlington, 1885; a member of the Vermont State Medical Society and for twenty-five years superintendent of the Mary Fletcher Hospital, Burlington, Vt.; died at that institution, April 12, aged 64.

Robert J. Menzie, M.D. University of Buffalo, 1866; for many years a practitioner at Caledonia, N. Y.; and for fifteen years a member of the board of education; died at his home in Caledonia, April 20, from cerebral hemorrhage, aged 81.

John Andrew Randolph, M.D. Missouri Medical College, St. Louis, 1884; a Fellow of the American Medical Association and president of the Glenn County (Cal.) Medical Society; died at his home in Willows, Cal., April 10, aged 64.

George Ford, M.D. University of Toronto, 1905; for seven years a practitioner of Shakespeare, Ont., but for the last year a resident of Stratford, Ont.; died in the Stratford General Hospital, April 19, from gallstone disease, aged 37.

Alexander Hunter, M.D. University of Pennsylvania, Philadelphia, 1869; surgeon of the Sixteenth Kentucky Volunteer Infantry during the Civil War; died at his home in Washington, Ky., April 12, from pneumonia, aged 71.

Hiram H. Bardwell, M.D. Rush Medical College, 1869; for many years a practitioner of Flint, Mich.; was found dead at the home of his daughter in Chicago, April 24, from the effects of a gunshot wound of the heart, aged 75.

Robert Edward McCracken, M.D. College of Physicians and Surgeons, Chicago, 1904; a practitioner and druggist of Oakland, Cal.; died in a hospital in East Oakland, Cal., about April 13, after an operation for appendicitis.

Samuel Gilbert McDonald, M.D. College of Medicine and Surgery, Physio-Medical, Chicago, 1905; Chicago College of Medicine and Surgery, 1908; died at his home in Coffeyville, Kan., April 13, from pneumonia, aged 42.

David Blair McIntire, M.D. University of Pennsylvania, Philadelphia, 1905; a member of the Medical Society of the State of Pennsylvania and a practitioner of Pittsburgh; died at his home in that city, April 20, aged 34.

William W. Lloyd. Physio-Medical College of Indiana, Indianapolis, 1873; for more than sixty years a practitioner; died at the home of his daughter in Bellingham, Wash., February 21, from paralysis, aged 96.

Samuel Wilkins McClain, M.D. Jefferson Medical College, 1869; a veteran of the Civil War; said to have been the oldest practitioner of Loudonville, Ohio; died at his home in that city, about April 8, aged 74.

Ira Thomas Bronson, M.D. Dartmouth Medical School, Hanover, N. H., 1870; formerly president of the Pettis County (Mo.) Medical Society; died at his home in Sedalia, Mo., February 15, from uremia, aged 75.

Philo C. Hubbell, M.D. Eclectic Medical Institute, Cincinnati, 1871; for more than forty years a practitioner of Syracuse, N. Y.; died suddenly in that city, April 12, from cerebral hemorrhage, aged 72.

Samuel S. O. Warren (license, Wash. 1882), founder of Roy, Wash., and postmaster of that place for more than twenty-five years; a veteran of the Civil War; died at his home April 10, aged 75.

Robert Robinson, M.D. Long Island College Hospital, Brooklyn, 1866; for many years a practitioner of East Brady, Pa.; died at the home of his son in Medina, Ohio, April 4, from diabetes, aged 75.

Charles Willard Ray, M.D. Dartmouth Medical School, Hanover, N. H., 1882; a member of the Maine Medical Association; died at his home in Sangerville, Me., April 10, from pneumonia, aged 54.

William Lucius Hunter, M.D. University of Buffalo, 1890; formerly a clergyman of the African Methodist-Episcopal Church; died at his home in Brooklyn, April 22, from nephritis, aged 65.

Edwin T. M. Hurlbut, M.D. University of Buffalo, 1867; formerly a practitioner of Sebastopol, Cal.; a veteran of the

Civil War; died in the Soldiers' Home, Yountville, Cal., April 14, aged 86.

Simon W. Kiester, M.D. Jefferson Medical College, 1868; a veteran of the Civil War and for many years a practitioner of Pleasant Hill near Dayton, Ohio; died at his home, April 15, aged 72.

Georgia Estella Finley, M.D. Ohio Medical University, Columbus, 1898; for two years a member of the staff of the Cincinnati Sanitarium; died in that institution, April 10, aged 36.

Elijah Bennett Chapin, M.D. University of Michigan, Ann Arbor, 1863; Bellevue Hospital Medical College, 1875; of Jackson, Mich.; died in the Jackson City Hospital, April 8, aged 79.

Carl David Wells, M.D. Denver and Gross College of Medicine, Denver, Colo., 1910; died at the home of his mother in Billings, Mont., April 15, from tuberculosis, aged 28.

John Olmstead Niles, M.D. Albany (N. Y.) Medical College, 1850; acting assistant surgeon in the Army during the Civil War; died at his home in Brooklyn, April 18, aged 88.

William McWilliams (license, Westmoreland County, Pa., twenty years practice, 1869) died at the home of his daughter in Merwin, Pa., April 17, from senile debility, aged 93.

Robert Fraser (license, Mich., years of practice, 1900), of Battle Creek, Mich.; a practitioner for fifty years; died at the home of his niece in Battle Creek, aged 72.

William H. Carter, M.D. American Medical College, Eclectic, St. Louis, 1880; died suddenly at his home in Altoona, Iowa, April 9, from heart disease, aged 75.

John Smallwood Patterson, M.D. University of Colorado, Boulder, 1902; died in Boulder, April 17, from injuries received a week before, by a fall of rock, aged 35.

Charles Jacob Winzenreid, M.D. Rush Medical College, 1866; the oldest practitioner of Iowa County, Iowa; died at his home in Amana, Iowa, February 12, aged 82.

William Alexander Crowder, M.D. Leonard Medical College, Raleigh, N. C., 1904; a respected colored practitioner of Petersburg, Va.; died about April 14, aged 36.

Jefferson D. Wright, M.D. University of Maryland, Baltimore, 1882; a physician and druggist of Louisville, Ga.; died at his home in that place, April 14, aged 54.

Robert J. Swain, M.D. University of Louisville, 1880; a member of the State Medical Association of Texas; died at his home in Pittsburg, Tex., March 11.

Nathan O. Boals (license, Ark., 1903), a practitioner for nearly thirty years; died at his home in Clarendon, Ark., February 11, from nephritis, aged 62.

Theodore P. Lockwood, M.D. New Orleans School of Medicine, 1866; died at his home in Crystal Springs, Miss., April 13, from senile debility, aged 75.

William J. McDonald (license, Ark., 1903), for thirty-five years a practitioner of the Southwest; died at his home in Hot Springs, Ark.; recently, aged 63.

Wellington Saxby Miller, M.D. Atlanta (Ga.) Medical College, 1870; a Confederate veteran; died at his home in Greenville, N. C., April 19, aged 72.

James Coughlin O'Donnell, M.D. Harvard Medical School, 1899; died at his home in Northampton, March 30, from arthritis deformans, aged 44.

William Lynch Miller, M.D. St. Louis Medical College, 1870; a veteran of the Civil War; died at his home in Des Moines, Iowa, April 22, aged 69.

William Allen Jones, M.D. Eclectic Medical Institute, Cincinnati, 1880; of Plumerville, Ark.; died in Little Rock, Ark., April 18, aged 55.

John G. Lewis, M.D. Chicago Homeopathic Medical College, 1895; died at his home in Rushville, Ind., about April 17, from pneumonia.

James M. Candler, M.D. Philadelphia College of Medicine and Surgery, 1868; died at his home in Dillsboro, N. C., April 5, aged 68.

Seth Martin Benepe, M.D. Bellevue Hospital Medical College, 1866; died recently at his home in Holdenville, Okla.

William H. Olsten (license, Utah, 1894), a practitioner since 1869; died at his home in Manti, Utah, April 18, aged 66.

James T. Farley, M.D. McGill University, Montreal, 1877; died at his home in Remus, Mich., April 20, aged 59.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE OXYPATHOR FRAUD

Since the days of Perkin's Metallic Tractors, no medical fraud of the drugless type has enjoyed greater vogue or swindled more people than those devices we have facetiously referred to under the term "Gas-Pipe Therapy." There are many of the gas-pipe frauds[1] on the market. The original was the "Electropoise," devised by one Hercules Sanche, who later elaborated his device and sold it under the name "Oxydonor," having in the meantime persuaded a not-too-exacting patent office to grant him patent rights on the egregious humbug.

So profitable, apparently, did the sale of this piece of fakishness prove that many imitations appeared. First, the "Oxygenor"; then, the "Oxygenator," the latter having its name changed later to the "Oxypathor." The "Oxytonor" and the "Oxybon" were still later modifications of the same scheme. Of these the Oxypathor (Oxygenator) has been the most extensively and elaborately exploited, and the extent to which the public has been defrauded has brought forth protests from various sources. The device itself consists essentially of a piece of nickel-plated tubing filled with inert material, sealed and having attached to each end a flexible cord with a garter-like attachment at the free ends. One garter is to be attached to the wrist and the other to the ankle of the person using the Oxypathor (Oxygenator). The gas-pipe itself is put in a bowl of cold water. According to the claims of the exploiters, the patient to whom the Oxypathor (Oxygenator) is attached, is made to absorb large quantities of oxygen through the skin.

So absurdly fraudulent is the Oxypathor that the public in various parts of the world has been warned against it. The Australian government has debarred the thing from the Australian continent, while the committee appointed by the British Parliament to investigate medical frauds reported:

"Much fraud is also successfully practiced by the advertisement and sale of appliances, as alleged cures for many ailments . . . appliances alleged to supply oxygen (otherwise than by inspiration) such as the 'Oxydonor' and 'Oxygenator' are, of course, deliberate swindles, for the makers cannot be supposed to be as ignorant of chemistry and therapy as their victims."

Now comes word from Vermont that the United States government has successfully prosecuted E. L. Moses of Buffalo, N. Y., general manager of the Oxypathor concern. The trial, which was held in Rutland, Vermont, lasted over a week, and on Nov. 7, 1914, Moses was found guilty of using the mails to defraud and was sentenced to serve eighteen months in the Federal Penitentiary at Atlanta. He, of course, appealed but the Appellate Court affirmed the judgment of the lower court, and as a result, Moses is now serving sentence.

The scheme has been a profitable one. At the trial it was brought out that the Oxypathor costs $1.23; it sold for $35. Aside from the element of suggestion inseparable from the use of a mysterious, expensive-appearing and imposing-looking device, purchasers of the Oxypathor could have obtained just as valuable curative effects from an empty tomato tin with a string tied to it. As a therapeutic agent, the Oxypathor belongs in the same class as the left hind foot of a rabbit caught in a graveyard in the dark of the moon. Yet at the trial the exploiters of the Oxypathor were able to produce witnesses to testify to the curative value of their gas-pipe—and a few of the witnesses called themselves doctors! This exhibition of credulity—or, in the case of

1. These devices are described in detail in the pamphlet "Oxydonor and Similar Frauds," price 4 cents.

physicians, worse—is but another proof of the inherent worthlessness of testimonials. Imposing and convincing testimony would have been forthcoming long ago to prove the therapeutic efficiency of the rabbit's foot if some one had an exclusive proprietary interest in the sale of rabbit's feet. —(*With Modifications and Additions from The Journal A. M. A., Nov. 14, 1914.*)

Denied the Use of the Mails

After the criminal proceedings had been brought against Elvard L. Moses of Buffalo, N. Y., the Solicitor of the Post Office Department submitted a memorandum to the Postmaster-General giving the facts that had been collected regarding the methods of the Oxypathor concern and recommending the issuance of a fraud-order against it. This memorandum charged the Oxypathor Company and Alvin L. Higley, president; Elvard L. Moses, vice-president and general manager; Charles N. McMichael, treasurer; Charles W. Brooke, secretary and assistant general manager; Charles J. Armitage, business manager; Clarence E. Edson, sales promoter; E. H. Johnson, oxypathic specialist, and Joseph Salguando, Spanish expert, and also the Oxygenator Company and the Buffalo Oxypathor Company all of Buffalo, N. Y., together with the Central Ohio Oxypathor Company and W. H. Sandwick, its general manager at Columbus, Ohio, also, the Delaware Oxygenator Company with Booth and Broadway, its managers at Wilmington, Del., with conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises.

The Postmaster-General issued the order and the United States mails were closed to this fraud. The memorandum of the solicitor contains so much of interest that we quote from it freely:

THE GOVERNMENT'S REPORT

"The Oxypathor Company was incorporated in New York state in 1906 under the name of the Oxygenator Company, the name being changed in July, 1911, to the present name of the Oxypathor Company. The headquarters of the company are in Buffalo, N. Y., where its general offices are located and from which place it distributes its devices to purchasers and to agents throughout the world. Elvard L. Moses, vice-president and general manager of the company, who is in active charge of its affairs, was convicted in the United States District Court at Rutland, Vt., on Nov. 6, 1914, of using the mails in the furtherance of a scheme to defraud in the conduct of this business, and was sentenced on Nov. 7, 1914, to eighteen months in the penitentiary at Atlanta, Ga., a stay of sentence and bail being refused. This case is now pending on appeal before the United States Circuit Court of Appeals for the Second Circuit, having been taken up on a writ of error. [As has been stated, Moses lost his appeal, the Appellate Court affirming the judgment of the lower court.—ED.] The transcript of the record in the trial court was introduced in evidence at the hearing before this office by the respondents.

"The business of this company is the sale through the mails of a device known as an Oxypathor, which consists of a brass cylinder filled with a black powder. To each end of the cylinder is attached a copper wire at the termini of which are straps and 'treating plates' designed for the application of these wires to the human body. The cylinder containing the power is termed by the company the 'polarizer' and is to be immersed in cold water while the machine is in use.

"In its advertising matter, which is freely circulated through the mails, the company represents that the Oxypathor with attachments is a 'thermo-diamagnetic instrument,' which, when attached to the human body, alters its magnetic properties, greatens its affinity for oxygen, and thus increases the body's capacity to attract and absorb the oxygen of the air, and further that the use of the machine in accordance with the directions which accompany each instrument, will quiet the most agonizing pain in a marvelously short time, give profound restful slumber, stimulate and arouse the body and all its organs to renewed vigor, and cure practically every disease. The advertising matter in which these representations are made is prepared by the company at Buffalo and from that point is mailed either to agents or to prospective purchasers in all parts of the world. There are in evidence in this case some dozen different pamphlets, all elaborately printed, which treat of the alleged power of the Oxypathor to cure disease.

"The instrument sells for $35, additional charges being made for special treatment plates to be used in the treatment of certain diseases. From the year 1909 to the date of the criminal trial, the company has sold 45,451 appliances. . . ."

The solicitor's memorandum after quoting in detail some of the false and fraudulent claims made for the Oxypathor, continues:

"Both at the criminal trial and at the hearing before this office the government produced expert testimony which clearly showed that the claims of the company for this device were entirely without foundation in fact. Physicists, chemists and experts on radio-activity, all of whom appeared and testified in behalf of the government, agreed that the machine was absolutely inert and without power to influence any substance known to science, or to increase magnetism in any way."

Then followed a summary of the testimony given by chemists, physicists and physicians relative to the possibility of the Oxypathor possessing any chemical, physical or therapeutic properties. The consensus of these opinions was, in effect, to sustain the charge made at various times in THE JOURNAL that the Oxypathor possesses all the potentialities for curing disease that are inherent to an empty tomato tin with a string tied to it! Then the memorandum continues:

CONFIDENTIAL INSTRUCTIONS TO AGENTS

"Throughout the advertising matter the company represents that the oxypathor is especially efficacious in the treatment of chronic diseases and diseases of long standing. Touching the good faith of the company in making these representations to prospective purchasers, the following is quoted from the confidential instructions issued to selling agents by the company:

"Use judgment in taking cases. Take the cases already suggested—the ones in which you have an even show with the doctors. Sidestep the cases which have been drugged for years and years. You might just as well hitch the Oxypathor to a mummy—or to a stone hitching-post—or a telegraph pole—as to some of the cases which will come to you as a last resort. Be wise—and side-step these last-resort cases. They spell nothing but trouble—and failure—and knockers. Tell them politely but firmly that they have waited too long, and let it go at that. This need not dampen your enthusiasm. It should not. It is simply showing good judgment. It is fending off that which might destroy your enthusiasm. It is not that we fear hard cases. Nothing of the kind. They may be as hard as they wish—provided of recent origin. Until firmly established, better play the business 'safe.' It will pay you well to do so."

HOW TO CATCH THE GULLIBLE

Then follows a number of quotations from the same pamphlet of "confidential instructions" issued to the selling agents by the company. Here are some of them:

"Tell yourself repeatedly that the Oxypathor is all right. Repeat this until firmly convinced that it is all right. Thereafter you will be invincible. From that time—from the time you get faith—have confidence—you will win."

"This brings you face to face with the matter of prospects. How secure them? Listen—you will find prospects by keeping out where the money grows. Get that? You will find prospects by keeping out amongst the people."

"Furthermore, you should engage every possible acquaintance in conversation. Instead of merely nodding acquaintance, stop to talk. At first, let this talk drift as it will. Soon, though, direct it. Say, 'Feeling pretty good?'

"You will be surprised to see how many do not feel good—and they'll give you the whole story—if you will keep still. Then you can get in your licks. Tell them what you have to sell or lease—and tell them that you will call soon to show the Oxypathor—and demonstrate it. Say this in such a way as to prevent a 'turn down.' Say it in a positive tone of voice. You will find few have the nerve to deny you a hearing. The rest is easy.

"Should the person say that he is perfectly well, say, 'And how are the folks?'

"You will be astonished at the amount of illness this will uncover—of which you never dreamed. You must, though, remain quiet for some time after asking the question. Some persons have a habit of saying 'all right'—but who quickly revise their statements—if you remain quiet and say nothing."

"A VITAL TIP!

"Above all—get some money in advance. Get a payment. Do this without fail. You must—to get the user's full co-operation. Unless the user must bear expense, he will have nothing at stake, and bitter experience teaches that nothing at stake means poor co-operation."

"The less theory you talk, the better. Use common words rather than technical words—and save yourself hours of weary talking. It is far better to say, 'Oxygen burns up the wastes and poisons in the blood, thus leaving it rich and pure, and you well,' than to undertake to describe these poisons, wastes and acids. The number of fool questions that you will find hurled your way if you undertake technical presentations will surprise—and disgust you. Sidestep as here suggested."

TESTIMONIALS FROM PHYSICIANS

Of course, the main reliance of the Oxypathor fakery was, as is the case in all medical frauds, testimonials. Not only did they present testimonials from laymen, but they were also able to employ certain physicians who gave so-called clinical reports regarding the alleged therapeutic value of this piece of gas-pipe. In the trial that was held at Rutland, Vt., the following physicians were reported by the Rutland newspapers at the time, to have taken the stand in defense of the Oxypathor:

Dr. Allen R. Taylor, Chattanooga, Tenn.: Taylor told of numerous "cures" worked by the Oxypathor under his instructions. It might be mentioned, incidentally, that Taylor is — or was — in the business of selling Oxypathors.

Dr. Louis Hazen, Burlington, Vt.: Hazen testified, according to the papers, that he had cured a man of alcoholic paralysis and a woman of "paralysis of the spine" with the Oxypathor.

Dr. Roy H. Cox, Chicago: Cox, according to the reports, at the request of a man interested in the Oxypathor, "treated" several patients with one of these fakes. A person with "poor blood and otherwise in a rundown condition" was treated by Dr. Cox with the Oxypathor and was "well in six weeks"; a case of "blood poisoning was cured in six days"; more marvelous still: "Acute appendicitis was cured in a few days while lumbago was relieved at once." Dr. Cox also had "an alcoholic paralytic" who was "ultimately cured" by the Oxypathor.

Dr. Wm. W. Cook, Chicago: Dr. Cook, according to the newspaper report "treated erysipelas, gall trouble, tonsilitis, pleurisy and lumbago" with the Oxypathor and "in every one of these cases the patient ultimately recovered." Dr. Cook was willing, it seems, to express the opinion that these benefits were directly due to the use of the Oxypathor! On cross-examination, Cook admitted that the patients who had thus been "cured" had also been given general hygienic, dietetic and other treatment at the same time that they were attached to the Oxypathor.

Dr. Joseph P. Ghio, St. Louis, Mo.: Ghio is credited with reporting a "wonderful case" of a cure of "asthma" by means of the Oxypathor. The patient had suffered "for over twenty-two years" and in spite of the best treatment among specialists in this country and abroad "she got no relief." An Oxypathor was attached and in fifteen minutes she was relieved! Dr. Ghio also cited a "case of paralysis following measles," which he cured with the Oxypathor. It developed, on further questioning, that Ghio was an agent for the Oxypathor.

To return to the memorandum to the Postmaster-General: One method by which the Oxypathor concern attempted to get testimonials was to have the agents urge certain of the victims who had purchased these devices to write the Postmaster-General protesting against the issuance of a fraud order. The Oxypathor Company went so far as to outline a letter that these persons might write. As the solicitor's memorandum states "testimonials obtained in this way have been demonstrated to be of little probative force." The solicitor also suggests that the number of people that wrote these letters constituted but a small percentage of those who had purchased the 45,000 Oxypathors which the company has sold since 1909. To quote further from the memorandum:

"Testimonials are notoriously of small evidentiary value in questions of this character. They are frequently obtained for instruments and alleged remedies of no value from persons suffering from chronic ailments who are prone to regard the least improvement in their condition as an indication of progress toward a cure. In many instances they were written by persons who imagined they were suffering from disease when in fact they were not, by persons whose recovery is due to nature, and by persons whose recovery is due to nature and local or hygienic treatments prescribed in connection with the alleged curative agent. I am satisfied and find that all of the testimonials filed in this case fall within one or another of the above classes.

"As to the clinical reports submitted by the physicians employed by this company to test the Oxypathor, there is nothing to show that even in these cases the use of the instrument alone effected the cure.

"The respondents did not attempt to introduce any evidence whatsoever as to the method in which the machine worked or to explain the hitherto unknown force which would be necessary to cause the body to take up unusually large amounts of oxygen through the skin, and the record is entirely silent as to the means by which any of the alleged cures are supposed to have been effected. Briefly, the position of respondents was that all the representations as to how the machine was supposed to operate were immaterial, and that the sole question to be determined at the hearing was the existence or non-existence of any therapeutic value in the instrument itself, and respondents further claimed that the only method whereby it was possible to determine the therapeutic value of the instrument was by tests upon the human body in a diseased state. Necessarily, none of the tests made by the government were made upon the human body in such a state and respondents objected to the introduction of the government's evidence showing that the machine was inert and therefore incapable of affecting the body in any way.

"Attention is invited, in this connection to the fact that all of the company's advertising matter whereby persons are induced to buy this instrument is based on the representation that increased amounts of oxygen are furnished by it to the human body. This is a specific, concrete, material representation, and there is no doubt that purchasers were induced to part with their money on the strength of this representation.

"The respondents' contention that the therapeutic value of this device can be shown in no other way than by tests upon the human body is without merit when considered in connection with the fact that the substances of which the device is made up are well known, and that they have not been shown to possess, either alone or in combination with each other, any such power as is claimed for them. No attempt was made to controvert the government's evidence as to the materials of which these instruments are composed, and no effort made to show that these substances possessed any therapeutic value except by means of the testimonials and reports above referred to. . . ."

"In conclusion, it may be said that the defense in this case fails entirely to meet the government's charges, and is one that might be urged with equal force in defense of any fraudulent mail-order medical concern, and that in fact had this device possessed any of the power claimed for it, the respondents would not have been driven for their defense to solicited testimonials and reports and a legal technicality, but would have been able to produce some affirmative proof to meet the burden placed on them by the evidence of the government. When it is considered that the company sells this instrument for the treatment of practically every known disease, many of which if allowed to continue without immediate medical treatment may prove fatal to the patient, and that those who buy the device may be lulled into a sense of false security from all disease, necessarily resulting in many cases in a serious or even fatal outcome which might have been prevented had medical treatment been promptly resorted to, the vicious nature of this scheme becomes apparent.

"I find that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and therefore recommend that a fraud order be issued against the concerns and parties named in the caption of this memorandum."

On March 10, 1915, a fraud order was issued against the Oxypathor Company, *et al* at Buffalo, N. Y., Columbus, Ohio, and Wilmington, Del. Later, evidence was presented by a postoffice inspector to the federal authorities to show that P. K. Reynolds, Columbus, Ohio, had been made general manager of the Central Oxypathor Company in the place of W. H. Sandwick. The inspector showed further that Reynolds was receiving mail pertaining to the sale of Oxypathors. The Solicitor of the Post Office Department, on receipt of this evidence, recommended that the fraud-order against the Central Ohio Oxypathor Company be extended to include P. K. Reynolds. In accordance with this recommendation, a supplemental fraud-order was issued against this individual on April 20, 1915.

V. 19

Correspondence

Radiant Energy and Cataract

To the Editor:—In replying to my objections to his argument regarding the production of cataract (THE JOURNAL, April 10, 1915, p. 1264), Professor Burge apparently accepts my statement that senile cataract usually begins below, but attempts to use it in support of his view. At first glance the statement of Schanz, quoted by him in this connection as reflecting the present status of opinion, seems convincing. This view is, however, not accepted by such an able investigator as Fuchs. As a matter of fact, the truth of my statement that the iris completely protects the lower part of the lens from light should be obvious to any ophthalmologist. For to detect with the ophthalmoscope an incipient cataract at its usual starting point at the periphery below, it is necessary to dilate the pupil with a mydriatic.

Professor Burge refers to Cramer's suggestion that glassblowers' cataract is due to concentration of chemical rays at the posterior pole of the lens, and says that if this explanation is correct my criticism is not applicable to his experiments. Cramer's explanation, however, is undoubtedly not correct. It is true that with a point source of light, a dilated pupil and steady fixation, ultraviolet rays would be somewhat concentrated at the posterior pole of the lens if able to reach there, but with a pupil of ordinary size or one contracted by strong light, and an extended light source, the greatest concentration would be in the pupillary area. More important still is the fact that the adult lens absorbs all waves less than about 0.380 micron in length, so that no waves known to be abiotic could possibly reach the posterior pole. The longest waves with which Burge was able to coagulate proteins were 0.302 micron in length. Louis Bell and I found that with extreme concentration and an exposure of one and one-half hours to light containing waves of 0.305 micron, the anterior lens capsule of the living rabbit showed the slightest possible trace of injury, but that with waves of 0.305 micron, no effect could be produced. We found also that light containing waves of 0.295 micron, which are transmitted by the cornea, produced changes in the anterior capsule in about three minutes, but that after prolonged exposure to these waves the lens substance itself was injured only to a microscopic depth (20 microns). It is therefore evident that if ultraviolet light produced cataract, the changes would necessarily begin at the anterior pole. F. H. VERHOEFF, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DEFINITION OF THE WORD "FEEBLEMINDEDNESS"

To the Editor:—What is the correct usage of the word "feeblemindedness"? M. T., New York.

ANSWER.—The word "feeblemindedness" has always been freely used by writers on the subject of mental defect. It is only within comparatively recent years that any attempt has been made to give it a satisfactory definition. In 1904, the British Royal Commission for the Feebleminded recommended that the term "feebleminded" should include all mentally defective children who needed institutional care, in the three ascending grades of idiot, imbecile and feebleminded proper. More recently the term "moron" has tended to replace the term "feebleminded" in the more restricted sense. In 1906, the American Association for the Study of the Feebleminded officially resolved that the term "feebleminded" should be used generically to include all degrees of mental defect due to arrested or imperfect mental development, as a result of which the person so affected is incapable of competing on equal terms with his normal fellows or of managing himself or his affairs with ordinary prudence, and that the feebleminded should be divided into three classes of (1) idiots, those so affected that the mental development never exceeds that of a normal child of 2 years; (2) imbeciles, those whose development is higher than that of an idiot but whose intelligence does not exceed that of a normal child of 7 years, and (3) morons, those whose development is above that of an imbecile but does not exceed that of a normal child of about 12 years. Thus, the abstract term for mental defectiveness in general would be "feeblemindedness," with "idiocy" and "imbecility" for the first two grades of feeblemindedness and perhaps "morosis" for the third. The last term, however, though correctly formed (from the Greek μώρωσις) and found in the Standard Dictionary, has apparently not yet been adopted by writers on the subject.

DATE BOIL — NILE SORE

To the Editor:—The *National Geographic Magazine* for December has the following concerning the "Nile sore": "An uncanny pernicious pest called the 'date boil' scars the face of every human born in Bagdad. Its cause and cure is unknown."

Please inform me concerning this sore, as I find nothing specific about it in my limited library. R. P. WOODS, M.D., Altheimer, Ark.

ANSWER.—Presumably the author of the article in the *National Geographic Magazine* includes under the term "date boil" the condition known as "bouton d'Alep" and "Delhi button." Other names for this infection are "endemic boil disease," "oriental sore," "Bagdad-Nile boil," "Delhi sore," "Biskra boil," "Sarten-Beula," "tropical ulcer," etc.

The Delhi boil is an infection caused by a protozoan parasite described by Wright, in 1903, as *Helcosoma tropicum*, by Marzinowski and Bogrow, in 1904, as *Ovoplasma orientale*, by Firth as *Leishmania furunculosa*, and referred to by more recent authors as *Leishmania tropica*. The parasite is very closely related to *Leishmania donovani*, which is found in cases of kala-azar.

It is exceedingly rare that active infections of Delhi boils are found in this country.

A case is described in THE JOURNAL, April 29, 1911, p. 1257.

REMOVAL OF INTESTINE

To the Editor:—What is the greatest number of feet of small intestine that has ever been successfully removed in man? X. Y. Z.

ANSWER.—We are not able to refer specifically to the case in which the greatest length of intestine was removed. Experiments have shown that dogs may survive the removal of 75 per cent. of the total length of the small intestine; but such animals do not return to full health. As much as 50 per cent. may be removed with a gradual return to a condition of practically normal weight and metabolism when the animals are maintained on a favorable diet under good conditions. (See Resection of the Small Intestine, editorial, THE JOURNAL, Feb. 15, 1913, p. 523.) E. R. McGuire reported the successful removal of over 11 feet of small intestine (abstracted in THE JOURNAL, Jan. 25, 1913, p. 321).

EXCESSIVE FLOW OF SALIVA

To the Editor:—A boy, aged 2½ years, in every way normal and healthy, has excessive flow of saliva, which pours continually from the mouth during the day, keeping the clothing wet. Is there any treatment? H. T. E.

ANSWER.—In such cases it is necessary to consider the process which causes the increased flow of saliva. This might be a local irritation, such as inflammation of the mouth, teething, etc., or some disturbance of the nerve supply, either central or peripheral. Among the causes of derangements of innervation may be mentioned poliencephalitis, facial paralysis, idiocy, etc. Inframaxillary neuralgia and hysteria are other conditions to be thought of. Many of these conditions are probably out of the range of possibility in the case mentioned. A careful examination for local irritation would seem to be especially called for.

IMMUNIZATION BY INUNCTION

To the Editor:—I note in Abstract 93, page 1038, THE JOURNAL, March 20, 1915, that tuberculin inunctions were used to produce immunity at Hela. Is this form of tuberculous vaccine on our market? W. W. WILKINSON, M.D., Phoenix, Ariz.

ANSWER.—The remedy employed is Moro's tuberculin ointment, a 50 per cent. ointment of old tuberculin with lanolin as a base. It is supplied by a number of the firms manufacturing tuberculins, etc. See N. N. R., 1915, pp. 304-206.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Regular, Little Rock, May 11-12. Sec., Dr. W. S. Stewart, Citizens Bank Bldg., Pine Bluff. Homeopathic: Little Rock, May 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic: Little Rock, May 13. Sec., Dr. C. E. Laws, 712 Garrison Ave., Fort Smith.

DELAWARE: Dover and Wilmington, June 15-17. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Jacksonville, June 15-16. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

GEORGIA: Atlanta and Augusta, June 2-4. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, May 13-15. Sec., Dr. C. St. Clair Drake, Springfield, Ill.

IOWA: Iowa City, June 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 8-10. Sec., Dr. H. A. Dykes, Lebanon.

KENTUCKY: Louisville, June 8-10. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, June 3-5. Sec., Dr. E. L. Leckert, 716 Machea Bldg., New Orleans.

MARYLAND: Homeopathic, Baltimore, June 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

MASSACHUSETTS: Boston, May 11-13. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MICHIGAN: Detroit, May 27-29. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 1-4. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 15-16. Sec., Dr. E. H. Galloway, Jackson.

NEBRASKA: Lincoln, June 10-11. Sec., Dr. H. B. Cummins, Seward.

NEW YORK: Albany, Buffalo, New York and Syracuse, May 25-28. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

NORTH CAROLINA: Greensboro, June 8. Sec., Dr. H. A. Royster, Raleigh.

OHIO: Columbus, June 8-11. Sec., Dr. George H. Matson, Columbus.

PENNSYLVANIA: Philadelphia and Pittsburgh, June 1-3. Sec., Dr. Nathan C. Schaeffer, Harrisburg.

SOUTH CAROLINA: Columbia, June 8. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

District of Columbia January Report

Dr. George C. Ober, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, Jan. 14-16, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 6, of whom 3 passed and 3 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University	(1914)	87.1
University of Michigan, Dept. of Med. and Surg.	(1910)	85.5
University of Virginia	(1908)	80.5
FAILED		
Howard University	(1914)	73
Maryland Medical College	(1912)	58.2
Mcharry Medical College	(1912)	68.4

North Dakota January Report

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the oral, practical and written examination held at Grand Forks, Jan. 5-8, 1915. The total number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 5, of whom 3 passed and 2 failed. Six candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Rush Medical College	(1914)	77.4
Johns Hopkins University	(1913)	75
Marquette University	(1913)	79.8
FAILED		
Medical College of Indiana	(1902)	43
Milwaukee Medical College	(1912)	61

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University		(1907)	Illinois
Rush Medical College		(1913)	Missouri
University of Minnesota		(1905) (1912)	Minnesota
University Medical College, Kansas City		(1908)	Kansas
Washington University		(1912)	Illinois

Book Notices

LA CURE DE SOLEIL. Par Dr. A. Rollier. Cloth. Price, 20 francs. Pp. 217, with 147 illustrations. Lausanne: Constant Tarin, 1914.

Heliotherapy as a systematic method of treatment has been practiced for little more than a decade. The first clinic intended for the sunlight treatment of surgical tuberculosis was opened at Leysin by Rollier in 1903. This method, combined with the climatic treatment by high altitude and cold air, has given remarkable results. Rollier has been followed by some other clinicians in Europe and to a lesser extent in the United States. The action of light is to be regarded as due to the effect of the heating rays, on the one hand; of the waves of shorter wave length, actinic rays, on the other. The effect of the latter rays is to increase the resistance. This is largely expressed by the formation of pigment; and light, as a remedy, acts in a manner similar to the cold in the fresh air treatment. The method is applied more particularly to surgical cases. It is in these especially that good results have been obtained. Rollier describes the treatment and the results in a profusely illustrated work of 217 pages, to which are added 105 full-page illustrations. The general action of the remedy and the arrangements for giving general sun-baths are described in the first six chapters, comprising about half the text. The rest of the book is devoted to the description of local diseases of the various joints, of the glands, and of the bones. A short chapter concerns pulmonary tuberculosis for which, however, the author makes very moderate claims. He warns that the treatment must be applied with considerable caution, being especially applicable to incipient cases. The treatment in the later stages is combined with various forms of work and of recreation. We see children studying their lessons or attending to their gardens or playing various games, practically nude, even in winter. While it may easily be urged that this method of treatment is carried to an extreme, there is no doubt that the sun-bath needs to be better known and understood. For this purpose, the work of Rollier may do good service, and it is to be hoped that it will stimulate the application of such methods in the United States.

THE PROPHYLAXIS OF MALARIA WITH SPECIAL REFERENCE TO THE MILITARY SERVICE. By Charles F. Craig, Captain, Medical Corps, U. S. Army. Paper. Pp. 115, with illustrations. War Department, Office of the Surgeon-General, Bulletin No. 6. Washington: Government Printing Office, 1914.

This thoroughly covers the different phases of prophylaxis as now understood. Of first importance in prophylaxis, the author says, is the diagnosis; and in order to be able to make the diagnosis, a knowledge of the morphology and life cycle and how to demonstrate the parasites, both in the blood of man and in the mosquito, are essential. A good description, with illustrations, of the different forms of the plasmodium is given, with the method of making and staining blood specimens. The malarial mosquito, its life history and habits, with points of differentiation from other mosquitoes, are described and illustrated, methods of collecting and dissecting mosquitoes detailed, and different measures of prophylaxis by destruction of the insects, by protection of man from the bites, by destruction of the plasmodia by quinin, etc. Practically all of this information applies to malaria prevention in civil life, and most of the measures are more easily carried out in civil life than in the military service. To those interested in the propaganda for the eradication of malaria in the malarious sections of the United States, this should prove an instructive pamphlet.

The New Gospel of Health and Efficiency.—Illness as well as injury occasions a large economic waste to the company as well as to the employees on account of lost time, idle machinery and ineffective work. It is to the direct interest of the company as well as the individual to bring about a reestablishment of health, and consequently of efficiency, by supplying the best conditions possible for recovery.—*Survey.*

Miscellany

Health in Panama in 1914

The health millennium has not yet arrived in the Panama Canal Zone, but has perhaps come as near that place as any other. The health department, following in the footsteps of its first great chief health officer, and not subject to the unintelligent action or lack of action of politicians, local and state, pseudo- and other statesmen and would-be statesmen and antis of all sorts, goes ahead and gets things done. If the accumulated experience of history and of the profession of medicine agree that some measure or method of hygiene or sanitation or disease prevention is good, it is at once embodied in a regulation and put into effect. The results soon begin to show in the monthly and annual reports of the department, and the following from the report of the Chief Health Officer, Lieut.-Col. Charles F. Mason, shows some of the things that happened in 1914:

"The health of employees has been better than in any previous year. The total admission rate to hospitals for 1914 was 244.49, compared with 351.10 for 1913, and for disease alone 182.57, as compared with 246.91 for 1913. The total death rate for 1914 was 7.04, as against 8.35 for 1913; and the death rate for disease, 4.40, as compared with 5.24 for 1913. The noneffective rate for 1914 was 12.22, compared with 15.97 for 1913. With regard to malaria, the death rate has been reduced more than 50 per cent. since 1913, and the admission rate to hospitals more than 15 per cent. There were only seven deaths from malaria. The noneffective rate, hospitals and quarters, computed for the last five months of 1914 was 1.51. The admission rate for typhoid fever, 0.52, was more than 22 per cent. less than for 1913, although the case mortality was higher, giving a death rate of 0.09, as against 0.07 for 1913. The admission rate for dysentery was 1.80, compared with 1.97 for 1913, but the death rate was slightly higher. The death rate from pneumonia has increased from 0.83 in 1913 to 0.95 in 1914; all the deaths but one were among black employees. The increase in the disease is probably due to unusual prevalence of measles and the overcrowded condition in which people live in Panama."

CHAMBERLAIN in *Harper's Weekly*.
(By permission)

It should be explained that housebuilding in Panama has not kept pace with the growth of population, resulting in the overcrowding mentioned.

Here are two examples of the way in which the health authorities exercise their power:

"In the latter half of the year a periodic physical examination, including urine and feces, has been made of all food handlers in the kitchens, mess rooms and commissaries of the Panama Canal, with the result that one typhoid carrier and a number of cases of contagious diseases were detected and eliminated."

Wouldn't there be a good deal of comfort and satisfaction in the thought that all of our food handlers had been examined and the diseased ones "detected" and "eliminated" in the same way?

"During the year general vaccination was done in all the schools of the Canal Zone, as well as those of Panama and Colon; 117 children were vaccinated in the Canal Zone, 5,186 in Panama, and 1,097 in Colon. . . . In addition to the vaccinations in the schools, 33,204 other vaccinations were done."

Here is the year's record with reference to smallpox and two other deadly infections, equally well barred:

"One case of smallpox was removed from the Pacific Mail Steamship *Newport* on April 16 and recovered. With this exception, no cases of yellow fever, smallpox or plague originated on or were brought to the isthmus during the year."

The report brings out strikingly the difference between the effects produced by the health service in the Canal Zone and the regular variety of health service outside in the cities of the republic, handicapped by the usual conditions surrounding health department work.

Government Aid to Housing and Home Owning

Practically every European country has made provision for the assistance of home builders and for housing, either by direct loans, by loans to building or other associations, or by the government construction of houses and apartments, chiefly for the use of government employees. Bulletin 158 of the Bureau of Labor on "Government Aid to Home Owning and Housing of Working People in Foreign Countries" sets forth the details of the plans in the various countries of Europe for the improvement of housing conditions. Most of these measures apply to housing in the cities, but the housing of agricultural laborers in villages in some instances has been provided for. Advantageous conditions as to credits and low rates of interest are the distinguishing features of all these regulations. In some, an insurance feature is provided whereby the borrower is insured for the amount of his loan so that it will be wiped out in case of death or taken care of in case of permanent injury or loss of earning power. The reports cover chiefly the economic aspects of housing, the regulations for building with regard to light and sanitation not being dealt with to such an extent that comment might be made. This compilation is valuable as setting forth the experience of other countries on the housing problem crystallized into legislation.

Medicolegal

Damages Recoverable for Aggravated Injury

(Suelzer vs. Carpenter (Ind.), 107 N. E. R. 467)

The Supreme Court of Indiana affirms a judgment for $10,000 damages in favor of the plaintiff for an oblique fracture of his right femur and other injuries sustained by him while in the defendant's employ. The court says that the defendant contended that he should not be held liable for all the damages that the plaintiff sustained, because, as claimed, his injuries were greatly aggravated because of unskilled treatment by his surgeon; that for such aggravation the defendant was not liable. The defendant was permitted to introduce evidence to show lack of surgical skill in treating the femur fracture. It appeared that the plaintiff's surgeon made an incision in the thigh and bound together with wire the broken ends of the bone to prevent slipping. Some of the defendant's witnesses—surgeons—testified that better results would have followed if finishing nails and screws had been used in fastening together the broken bones. There was no evidence whatever to show any negligence on the plaintiff's part in the employment of his surgeon, who was regularly licensed and a person of experience in his profession. At the defendant's request the jury were instructed that the plaintiff could not recover for aggravation of injuries caused by unskilful treatment of his surgeon. It is undoubtedly true that one suffering a bodily injury by reason of another's negligence must use ordinary diligence and care in securing surgical aid, and, failing in such duty, cannot recover for ailments or diseases caused by such neglect. But, where ordinary care has been exercised in selecting a surgeon, the latter's unskilful treatment causing aggravation of the injury will not alone preclude a recovery by the plaintiff from the wrong-doer of damages for the aggravated as well as the original injury. The defendant created the necessity for a surgeon's services, and the plaintiff, without negligence, obtained the necessary surgical attendance. The risks incident to such service were incurred because of the defendant's fault, and the aggravation of the original injury, if any, by unskilful surgery, must be held the proximate result of the defendant's negligence. Nothing in the evidence in relation to unskilful surgery warranted a diminution in the damages assessed.

Monomania, Insane Delusions and Testamentary Capacity

(Dibble et al. vs. Currier (Ga.), 83 S. E. R. 949)

The Supreme Court of Georgia says that the medicolegal discussions of monomania, as distinguished from prejudice, animosity, ill will, bad judgment, drawing conclusions from insufficient premises or erroneous conclusions from facts—all of which may coexist with sanity—are often apt to confuse, rather than enlighten, the lay mind, and sometimes the professional mind. The Civil Code of Georgia recognizes such a thing as monomania as affecting testamentary capacity. But it means a mental disease; not merely the unreasonable conduct of a sane person. It is a species of insanity. Mania is a form of insanity accompanied by more or less excitement, which sometimes amounts to fury. The person so affected is subject to hallucinations and delusions, and is impressed with the reality of events which have never occurred and things which do not exist, and his actions are more or less in conformity with his belief in these particulars. This mania may extend to all objects; or it may be confined to one or a few objects, in which latter case it is called monomania. It is not every delusion which will deprive one of testamentary capacity. It must be an insane delusion. A definition of such a delusion which has been approved by this court is that it exists wherever a person conceives something extravagant to exist which has no existence whatever, and he is incapable of being permanently reasoned out of that conception. The subject matter of the insane delusion must have no foundation in fact, and must spring from a diseased condition of mind. It does not mean merely a mistaken conclusion from a given state of facts, nor a mistaken belief of a sane mind as to the existence of facts. Probably all men believe some things on slight evidence or that which is insufficient to prove the facts with any degree of certainty. But a bad reasoner, even one wanting in ordinary discernment or discrimination, is not necessarily insane. All men make some mistakes, and some men make almost constant mistakes. But this alone does not constitute insanity. Who is devoid of some prejudice? Some men are full of prejudices, and are largely governed by their likes and dislikes, often with little or no proper basis. But if mistakes, prejudices, or dislikes, though unjust, would suffice to show insanity, how many men could make a will? Mere jealous suspicions, though groundless, are not enough.

Damages for Malpractice in Treatment of Fractured Limb

(Cranford vs. O'Shea (Wash.), 145 Pac. R. 579)

The Supreme Court of Washington on the second appearance of this case before it affirms a judgment in favor of the plaintiff on condition that $2,000 be remitted, so as to make the amount $5,385, instead of $7,385. The court says that the plaintiff was injured in a coasting accident. Both bones of one of her lower limbs were fractured just above the ankle. The fracture was denominated a compound comminuted one. There was also a simple fracture or a nearly square breaking of the femur a short distance above the knee joint. The defendant was at the time surgeon at the emergency hospital, gave the plaintiff first aid, and thereafter treated her for four or five weeks, when she was passed to the care of the county physician, who cared for her until a surgeon of her own choosing took charge of the case. The accident occurred on January 17. February 2 or 3 Roentgen-ray photographs were taken, after which the limb was set and put in a cast. The malpractice was alleged to lie in the fact that the defendant did not make timely discovery of the fracture of the femur, and did not, after discovery, render proper and skilled service. On the appeal it was urged that the trial court erred in allowing evidence to be received tending to show that the defendant was negligent in that he did not have Roentgen-ray pictures taken at the time or shortly after the case came under his notice; that the trial court did not properly instruct on this feature of the case, and erred in submitting the issues to the jury, in that it failed to state the defendant's contention that he knew of the fractured femur, but could not heal it, because of the synovitis of the knee joint and the condition of the lower fracture. As for the first contention, the supreme court thinks it would have been better if the trial court had sustained the defendant's objection and had given his requested instructions, but, as there was independent evidence of negligence, and the testimony would in all probability go only to the amount of damages, it has been decided to treat the act and refusal of the trial court as not sufficiently prejudicial to justify a third trial of the case. Were the damages awarded excessive? The supreme court thinks so, as before indicated. It is fundamental that a physician or surgeon who is called to treat an injured person cannot be held to answer for the suffering caused by the original injury, but only for the suffering caused by his own negligent acts. The theory is evident that the original injury, so far as the attending surgeon is concerned, is as if it were self-inflicted. All hurts requiring surgical care are presumptively painful and tormenting. It can be judicially noticed that a compound fracture of the lower limb and a fracture of the femur are painful hurts, and will occasion long suffering, although treated with the best of surgical skill. In the instant case the defendant was not responsible for the original injury, or the infection which prolonged the healing of the lower fracture indefinitely and which made a surgical operation on it necessary, or for the six to twelve weeks of confinement during which the bones might have knit under the most skilful treatment had there been no infection. The law demanded that the plaintiff bear her share of the misfortune which angry chance threw over the unlucky parties to this action.

Society Proceedings

AMERICAN MEDICAL ASSOCIATION, SAN FRANCISCO, JUNE 21-25.

American Academy of Medicine, San Francisco, June 25-28.
Am. Assn. Gen.-Urin. Surgs., White Sulphur Springs, W. Va., May 18-20.
American Association of Immunologists, Washington, May 10.
American Climatological and Clin. Association, San Francisco, June 18-19.
American Dermatological Association, New York, May 13-15.
American Gastro-Enterological Association, Baltimore, May 10-11.
Amer. Gynecological Society, White Sulphur Springs, W. Va., May 18-20.
American Laryngological Association, Niagara Falls, June 1-3.
American Medico-Psychological Assn., Fortress Monroe, Va., May 11-14.
American Neurological Association, New York City, May 6-8.
American Orthopedic Association, Detroit, May 6-8.
American Otological Society, Niagara Falls, June 3-4.
American Pediatric Society, Lakewood, N. J., May 25-27.
American Society of Tropical Medicine, San Francisco, June 14-16.
American Surgical Association, Rochester, Minn., June 9-11.
Arizona Medical Association, Prescott, June 17-18.
Association of American Physicians, Washington, May 11-12.
Conf. of State and Prov. Boards of North America, Washington, May 14.
Connecticut State Medical Society, Hartford, May 19-20.
Florida Medical Association, De Land, May 12-14.
Illinois State Medical Society, Springfield, May 19-20.
Iowa State Medical Society, Waterloo, May 12-14.
Maine Medical Association, Poland Springs, June 9-10.
Massachusetts Medical Society, Boston, June 8-9.
Mississippi State Med. Association, Hattiesburg, May 11.
Missouri State Medical Association, St. Joseph, May 10-12.
Nat'l Assn. for the Study and Prev. of Tuberculosis, Seattle, June 14-16.
Nat'l Assn. for the Study of Epilepsy, Old Point Comfort, Va., May 10.
Nebraska State Medical Association, Hastings, May 18-20.
Nevada State Medical Association, Reno, June 17-19.
New Hampshire Medical Society, Concord, May 19.
New Jersey Medical Society, Spring Lake, June 22-24.
North Carolina State Medical Society, Greensboro, June 16.
North Dakota State Medical Association, Bismarck, May 12-13.
Oklahoma State Medical Association, Bartlesville, May 11-13.
Rhode Island Medical Society, Providence, June 3.
South Dakota State Medical Association, Sioux Falls, May 18-20.
West Virginia State Medical Association, Huntington, May 12-14.

NEW YORK ACADEMY OF MEDICINE

Meeting held April 20, 1915

The President, DR. WALTER B. JAMES, in the Chair

This meeting was called for the purpose of urging that the Quarantine Station of the Port of New York, now in the hands of the New York state government, be transferred to the United States Public Health Service.

Introductory Remarks by the President

DR. WALTER B. JAMES: For more than a quarter of a century the New York Academy of Medicine has advocated the transfer of the Quarantine Station of the Port of New York to the federal government. The reasons for this step seem to us more than adequate and are given in the resolutions which the academy recently passed. They are as follows:

WHEREAS, Of all the ports of this country New York ranks first as a receiving station for foreign goods and immigration, as well as a distributing center for the entire country and,

WHEREAS, the federal government controls all the service incident to the administration of the port of New York with the single exception of the quarantine, which is logically a part of the immigration service; and

WHEREAS, the United States as a party to international quarantine agreements cannot guarantee their uniform observance unless all quarantine stations are under federal control; and

WHEREAS, All the ports of this country, with the exception of Baltimore and New York, for the reasons above cited, have already ceded their quarantine functions wholly or in part to the federal government, therefore be it

Resolved, That the economical and efficient administration of the quarantine service, and above all the safeguarding of the public health, demand the transfer of the Quarantine Station of the port of New York from the state to the national government; and be it further

Resolved, That the government of the state of New York be and hereby is respectfully and earnestly urged to take immediate steps to secure such transfer.

Last night a political club passed a resolution endorsing the position taken by the New York Academy of Medicine and recommending the quarantine transfer. Does this not suggest that the day is not far off when, in matters of public health at any rate, political considerations will be subordinated to the immediate public good? There are two reasons for urging this change today. First, the fact that in our national Public Health Service we have what we know to be the most capable and effective piece of machinery in the world for defending the people from communicable disease conveyed from other nations, and second, because the melancholy state of affairs in Europe has for many months led physicians to believe that, with the advent of warm weather, and especially with the coming to our shores of European immigrants, the dangers of infectious disease will be greater than we have ever known.

The Present Health Conditions in Europe and Their Relation to This Country in the Coming Months

MR. HENRY JAMES, JR.: Under the conditions existing in Europe, where people are thrown out of their natural ways of life, epidemic disease very readily becomes possible. I have been recently where conditions are worse than elsewhere in Europe—in Serbia. The Serbians are a simple people with very few towns of any size, with little economic and social organization, living on farms and not equipped to meet disaster. There are few large buildings and few large hospitals, few places where refugees or homeless people can be housed. When the Austrian army entered the most populous portion of this country the result was confusion almost indescribable. The city of Nish, for instance, which ordinarily has a population of 25,000, now has from two to three times as many as normally. The result is that the people are living in stables, in stations, in restaurants or anywhere. The moment infection started it was bound to spread, and there are many people now suffering from typhus, typhoid, smallpox, scarlet fever, pneumonia and meningitis. The hospitals are utterly unable to care for them. Typhus is spread by vermin, and keeping patients clean is of the utmost importance; yet such is the destitution of the country that most of the men were lying in the clothes in which they had come from the trenches. Of 400 doctors working in the stricken district, 100 died during the month of February. The epidemic does not confine itself to the army, but is worst among the people who have been forced out of their homes. The death rate under these conditions is extremely high. If the Austrian army should invade Serbia tomorrow it could hardly escape contact with the infected houses and people, and would inevitably carry these infections back to their own country. The armies and people in the more northerly countries of Europe are still free from infectious diseases, but the unspeakable conditions are such that the approach of warm weather will threaten all of Western Europe and no one can say what dangers in the way of infectious disease will confront this country with the close of the war.

The Menace of Inadequate Quarantine and What an Efficient Quarantine Means to the Entire Country

DR. WILLIAM C. WOODWARD, Washington, D. C.: On April 27, 1857, there convened in the city of New York the Third Annual National Quarantine and Sanitary Convention, which put itself on record as being convinced that hope of bettering the evils of that time lay only in the enactment of uniform state quarantine laws, and the convention took action to bring about the enactment of such laws. War apparently put an end to the activities of this conference. Since that time, quarantine, which has been reduced to an efficient basis everywhere, has been made uniform with respect to practically all our maritime commonwealths new and old. There are four reasons why quarantine at the port of New York should be made a part of the national quarantine system. First, because of its relation to the foreign affairs of the United States; second, because of its relation to the domestic affairs of the United States; third, because of its relation to the domestic affairs of the state of New York, and fourth, because of the administrative affairs of the quarantine service itself. The admission and exclusion of citizens of foreign countries, whether they be immigrants or not, and of merchandise are governed by the general

principles of international law, by the terms of treaties and by federal statutes, and the interpretation of such law, treaties and statutes and their enforcement are essentially within the province of the federal government and not of the state. A state may exclude from its territorial jurisdiction any person or thing that would jeopardize the health and safety of its citizens, notwithstanding international law, treaty or statute; but just such efforts on the part of an individual state to substitute this judgment as to the proprieties of the situation for the judgment of other states and of the United States are the things that strain our harmonious relations with foreign nations and the harmonious relations between federal and state officers. It is incomprehensible that there should be for the entire country one law for the incoming immigrants, one law for customs and one law to insure the safety of navigation along our coasts, while for the exclusion of disease, which of all things is no respecter of state lines, there should be as many laws and as many establishments for their enforcement as there are commonwealths in our Union. The international relations of quarantine are clearly recognized by this state in the very administration of its quarantine service in that it relies for the efficiency of its service to a considerable extent on information concerning foreign ports obtained from the United States Public Health Service. This state has not undertaken to maintain its own foreign service for guidance in respect to these matters, realizing possibly that the cost of such a service would be prohibitive, and that legal obstacles would stand in the way.

From the standpoint of domestic affairs of the United States, quarantine at the port of New York should certainly be under federal service, since a large number of persons and a large quantity of goods passing through this port are destined to other commonwealths. These, if they wished, could establish their own inspection service against persons and things coming from abroad, even though their entry had been approved by the officers of the state of New York; but the cost of such inspection service and the interference that they would occasion to commerce were such as practically to prevent any state from doing so. These states relied on the efficiency of the service maintained by the state of New York, but they have no voice in or control of its operation. The persistence in maintaining its own quarantine station, merely for the protection of the state of New York, renders inexpedient in a practical way the establishment of a federal service to which the states in the interior are entitled. Were the question of a national quarantine service to come before a constitutional convention at the present time, there can be no doubt that the weight of influence of states in the interior would place the quarantine in the hands of the federal government.

So far as relates to the state of New York itself, there would seem to be no reason why it should assume the responsibility of safeguarding the health of the United States, and it would appear unfair to the state that it should have to make up deficiency in the cost of its quarantine service out of the general revenue of the state. From an administrative standpoint, the federal government is far better able to maintain at the port of New York an efficient quarantine service than is the state itself, and is therefore better able to protect not only the country at large, but also the state of New York. This is said without any reflection on the ability with which the affairs of the New York quarantine station have been conducted. An efficient quarantine service demands an organization sufficient to cope with emergencies. A sudden emergency may require that the capacity of the establishment at the port be increased 20, 50, possibly 100 per cent. within a few days or a few weeks, and the increase must be efficient immediately. The state can reasonably provide no such elasticity of service, but a federal service could readily adjust itself to such a situation by assembling trained officers, men and equipment from other parts of the country, leaving the ultimate increase in the force and equipment of the federal service to be met by new men and makeshift equipment at places where no serious need existed. Moreover, the federal service would have a larger advantage over the state service in the provision that could be made in the federal service for appeals. That the ranking officer of the port should and would have ample authority is certain. The ablest officers may at times want advice with respect to the passing of a vessel and its passengers, cargo and crew in a doubtful case. The easy method in such a case is to hold them; but modern quarantine seeks to interfere as little as possible with the movements of persons and merchandise, and the efficient officer in a case of doubt would seek the advice of his superior officer. Interested masters and owners of vessels and cargoes should have some appeal from the decision of the quarantine officer, no matter how competent he is. In order to make such an appeal of value, it must be directed to some one as far as possible removed from the effect of local prejudice and excitement, whose position is not jeopardized by local politics and who has had the training and experience that fits him to act intelligently. Nowhere other than in the Public Health Service can such men be found. Distance from the federal government need be no objection, for if California, Oregon and Washington can be administered effectively in respect to quarantine, certainly New York need fear nothing on the score of distance from the seat of federal government. The fact that so many of the states have discontinued their maritime quarantine stations and rely on the United States government for protection may not be in itself an argument that New York state should do likewise, but there is nothing in the relation of the state of New York to martitime quarantine which differentiates it in principle from the rest of our states. The bigness of the traffic passing the state quarantine at the port of New York is certainly no reason for refusing to transfer the administration of that quarantine to the federal government. It would appear, though I have not examined the records, that of the traffic passing the port of New York the larger percentage is destined to go beyond the limits of the city and state of New York than is the rule with respect to the analogous ultimate disposition of traffic entering at other ports. If this presumtion is correct, then the country at large has a greater proportionate substantial interest in the maintenance of quarantine at the port of New York than it has at other ports.

Finally, the fact must not be lost sight of that even should the state of New York transfer its quarantine station at the port of New York to the Public Health Service, the sanitary officers of the state have such relation to the administrative affairs of the Public Health Service, through the annual conference which the Surgeon-General of the Public Health Service is required to call, and the special conferences which sanitary officers of the states can require him to convene at times when the annual conference is not in session, as to enable the state officers to bring pressure on the Public Health Service to administer quarantine at the port of New York in a manner acceptable to the sanitary officers of the states. The international relations of the quarantine station of the port of New York, the relations of that station to the domestic affairs within the United States, the domestic relation of that station to affairs within the state of New York, and economy and efficiency in the administration under all conditions of the affairs of that station, all call for its transfer to the federal government. If there is anything which renders such transfer inexpedient, I have been unable to discover it.

Relation of the National Government to Quarantine and Other Public Health Agencies

HON. WILLIAM HOWARD TAFT: My service in the Philippines brought me into intimate contact with the problems of preventive medicine and enabled me to become intimately acquainted with the work of the Public Health Service. The evils of war are great, but it seems that we must recognize the good that is done. The Spanish-American War was productive of great good in that it brought the American medical profession into active touch with tropical diseases through the Army and Navy Medical Corps. From the time

that we occupied Cuba, American medicine made more progress in discovering the causes and the treatment of tropical diseases than in 100 years before. Because of its insanitary condition and its part in the spread of yellow fever, Cuba had become an international nuisance. To Walter Reed, Jesse Lazear and William C. Gorgas, surgeons of the United States Army, is due the credit of having stamped out yellow fever and malaria in Cuba and Panama; to Victor G. Heiser and Richard Strong for having controlled smallpox, beriberi, cholera, amebic dysentery and leprosy in the Philippines. If the United States has a body of men in the Army, Navy and Public Health Service equal to these tasks, it is also equal to the task of running the quarantine station at the port of New York. The United States government has a body of men in the Public Health Service equal to any corps in the world. The Public Health officers did ten million vaccinations in the Philippines, when the antivaccinationists came along and said, "There, that shows what liars they are, for there are only eight million in the population." They failed to take into account the fact that some of the people were vaccinated more than once. There were at one time 6,000 cases of smallpox in each of half a dozen provinces; since vaccination became compulsory there are none. It is incredible in the face of facts like these that any one can doubt the efficacy of vaccination, yet antivaccinationists remain unconvinced. The late Professor Loundsberry of Yale once said to me that the most astounding thing he knew was the capacity of the undergraduate mind to resist the acquisition of knowledge, and to those dealing with the problems of public health the capacity of the popular mind to resist the effect of the indubitable proof of facts must seem equally amazing. Beriberi had one time presented a problem in the Philippines, but since the cause of this affection has been found to be the eating of polished rice, there has been no difficulty in dealing with the disease. At one time there was an epidemic of cholera in Manila, and it became necessary to use armed force to keep the natives from using the river water; the efficiency of the enforced quarantine regulations and a serum that seemed to be very effective enabled the Public Health Service to control this epidemic. Manila now has a new water supply and new sewerage and is a healthy place. Again, the bubonic plague was brought to the Philippines from Japan, and a crusade was instituted against the rats and fleas; this soon stamped out the plague. At one time it was said that there were forty or fifty thousand lepers in the islands, but investigation showed that the number was greatly exaggerated. Through the efforts of the Public Health Service this class of unfortunates, who had hitherto been treated with atrocious cruelty and inhumanity, were placed on farms and made comparatively happy and contended. The Public Health Service has also dealt effectively with amebic dysentery in this locality.

Coming to Panama, it is interesting to observe that it was estimated that 70 per cent. of the natives were infected with malaria, so that the chances were 7 to 10 that if a mosquito bit a native it would become a carrier of malaria. Under these conditions the eradication of malaria from Panama seemed impossible, yet Dr. Gorgas has accomplished it. The control of hookworm in Porto Rico is another instance of the effective work of the Public Health Service. It may also be recalled that the services of this body were called for to clean up the Port of Guayaquil a few years ago when that city was threatened with an epidemic of yellow fever. During the Spanish War there were 120,000 men in the army, and 20,000 cases of typhoid fever occurred with a mortality of 7 per cent. In 1912-1913, an army of 18,000 men was sent to the Mexican frontier. These men had been vaccinated against typhoid fever; only one case of that disease occurred among them and that man had not been vaccinated against typhoid. All these facts make it evident that the federal government has a corps of medical men in the Army, Navy and Public Health Service equal in point of ability to investigate disease, in point of numbers and in point of experience in preventing disease to any corps in the world.

The federal government has every facility for dealing with disease; it has its agents in every dangerous port in the world to make reports on health conditions. The federal government now conducts fifty quarantine stations in this country, practically all excepting the one in New York. The New York Health Department and law are good, the best in the United States, and I have no idea of criticizing the conduct of the quarantine station. I take the opportunity to say here that I hope the bills threatening the effectiveness of the Public Health Laws in this state will be defeated. But quarantine is a national question, since it has an intimate relation to foreign and interstate commerce. It naturally comes within the sphere of the federal government, but is one field in which the state may act until Congress speaks. The contention that quarantine is a state matter and that constitutionally the federal government cannot interfere is about as absurd as the claims of the antivaccination cranks. Under the present law, even if the state authority wishes to continue to conduct quarantine, the federal government can step in at any time; it has the power to purchase the station. Such a transfer, say at $2,000,000, would help the treasury of the state of New York, though I am unable to say whether the national treasury is in a position to pay.

The objection is raised to the federal control of quarantine that the service is not adequate to deal with so large a port as that of New York. The Public Health Service is now conducting the quarantine in other large cities. Others deprecate the rigid uniformity in federal regulations. There need be no fear on this score, as variation is made in the regulations to meet local conditions as they arise. Some have asserted that the federal regulations do not include beriberi, but it will be found that the federal regulations can be extended so as to include this disease as well as others. Again, it is argued that the federal government could not interfere in coastwise trade; but here again federal legislation can be extended to coastwise trade just as to interstate commerce. Others, again, have held that there would be a lack of personal responsibility on the part of federal officers for a particular locality. This is a fallacy. There is, in fact, a greater responsibility on the part of the federal service because politics are wholly eliminated; the places of men in the Public Health Service are not subject to change in administration. The federal officers have no local interests at stake, are not influenced by local opinion, and have no object to attain by concealment of actual conditions. In this connection, the history of the outbreak of plague in California a few years ago is interesting. Here the policy of concealment, the steps that led to the interference of the federal government, and the chase of the ground squirrel which has continued ever since, is very instructive. There is no question that quarantine could be conducted far more effectively and economically under the same head and government with the customs and the immigration bureaus.

Again, this is not a matter in which New York alone is concerned; the whole country is interested. It is true that New York is the largest port in the United States, and that most of the immigrants arrive here; but they do not stay here. The entire nation is directly concerned. With the state administration of quarantine there is a division of authority that is not desirable. I am a strong states rights man in the sense that I believe in local self government as essential to the welfare of the Union; but quarantine under present conditions is a national and not a local affair. The federal government has made treaties with foreign countries involving questions of quarantine, and should logically be in possession of the instruments by which these treaties are enforced. When we face the world to meet conditions such as threaten us at the close of the war, it should be with a national and not a state system of quarantine. The transfer of the New York quarantine station to the federal government may not be so easy a procedure as we suppose, and hence there is all the more reason for agitation at the present time.

THE AMERICAN ASSOCIATION FOR CANCER RESEARCH

Eighth Annual Meeting, held in St. Louis, April 1, 1915

(Concluded from page 1525)

Incidence and Inheritability of Spontaneous Cancers in Mice; Inheritability of Tumors of Specific Organs

DR. MAUDE SLYE, Chicago: The present study is based on stock which has now yielded over 10,000 necropsies, and has produced 722 cases of unquestioned tumor, many of these cases showing multiple primary tumors of different organs, so that the total number of cancers is considerably over 1,000. Yet of this number there were only three tumors of the spleen, nine of the kidney, one to seven each of the stomach, rectum, face and jaw, adrenal, mesentery, chest wall, etc. The conclusion seems warranted that the provocation of the origin of cancer is of the type that stimulates rather than of the type that destroys. Tumors of the ovary occur in unmated females about as frequently as in the mated. Is it not possible that the overproduction of unused egg cells may as readily be a stimulating cause for cancer in mice of high cancer ancestry as a specific lesion due to the production of young or to any other cause? Ninety per cent. of the testicle tumors in this stock have occurred in males long unmated or never mated until after the appearance of the tumor. It seems likely that the overproduction of unused spermatozoa may as readily be the provocation of tumor in mice of high cancer ancestry as a specific lesion in this organ due to bacteria, wounds or other causes. Mammary gland tumors are about as common in unmated females as in the mated, and in this series they occur at a rather earlier age. It seems probable that the nonuse of an organ ready for normal function may as certainly prove the irritating provocation of cancer as forced breeding and suckling in mated females of high cancer ancestry.

Whatever the nature of cancer may ultimately prove to be, this fact is certain: It follows the laws of heredity not only in the transmission of cancer in general, but also in the transmission of cancers of specific organs with an inevitableness which makes it a character that can be manipulated. Cancer is transmitted as a tendency to occur from a given provocation probably in the form of overirritation, chronic or acute, and, according to these observations, is quite as likely to be of the constructive as of the destructive kind. The elimination as far as possible of all forms of overirritation to the tissues of an individual of high cancer ancestry should go far to remove the provocation of cancer; and the eugenic control of matings, so that cancer shall at least not be present or potential in both sides of the hybrid cross, ought to eventuate in a considerable decrease in the frequency of human cancer.

Studies on a Cell (Zehbe's) Found in Cases of Human Carcinoma and Mixed Tumor

DR. GEORGINE LUDEN, Rochester, Minn.: During the routine examination of parathyroids, attention was attracted by a peculiar pathologic cell, found repeatedly in cases of carcinoma which had come to necropsy. This cell belongs to the group known among pathologists as endothelioid; epithelioid or plasma cells. Zehbe has described it very minutely though his description contains three errors: the extremely small nucleus to which he refers is the nucleolus, his foamy protoplasm is the nucleus itself, and his numerous mitoses are particles of nucleolar chromatin. In three cases of carcinoma this cell served as "indicator," revealing carcinoma in organs in which it was not suspected; and in a case of hemachromatosis, supposed to be of tuberculous origin, it led to the discovery of generalized malignancy. In each of these cases the pathologic findings were not of a metastatic nature, but showed malignant degeneration in histologically different tissue. Downey has pronounced the cell a pathologic variety of fibroblast. In every instance its presence is accompanied by three prominent changes: increase of connective tissue, malignant proliferation of very diverse types of cells, and a chemical affinity for hematoxylin and other basic dyes in the parenchyma in the immediate vicinity of these cells and, in more advanced stages of malignancy, in the cells themselves. In consideration of these facts and the chemical reactions which this seems to imply, the assumption does not seem to be unwarranted that three factors are needed for the effective progress of malignancy: (1) a disturbed internal chemistry; (2) an outside irritant, and (3) a local chemical defenselessness of the tissue which is first to succumb.

The following conclusions were drawn: In the organs of patients dead of carcinoma there may be found a peculiar cell (probably a pathologic type of fibroblast) which occurs in the presence of foci or metastases. The association of this pathologic type of fibroblast with malignant changes is so constant that its presence serves as an indicator of the presence of malignant changes. The cell may be known by its oval nucleus 5 by 10 microns in diameter, sometimes in a faint zone of cytoplasm. The development of this pathologic connective tissue in association with carcinoma suggests the presence of a widely distributed chemical factor fundamental in the production of cancer.

Comparison of the Immunizing Effects of the Subcutaneous and the Intraperitoneal Administrations of Tumor Cells Against the Growth of Carcinoma in Mice

DR. MAJOR G. SEELIG and DR. MOYER S. FLEISHER, St. Louis: Both intraperitoneal and subcutaneous tumors have a mutual inhibiting action on each other, provided they are virulent or moderately virulent. An intraperitoneal tumor, however, has relatively a very much stronger inhibiting power than has a subcutaneous tumor. The number of takes after intraperitoneal inoculation is smaller than after subcutaneous inoculation, and the rate of growth is also less rapid. The intraperitoneal inoculation of unheated, as well as of heated tumors, yields a number of takes approximately 40 per cent. less than does the subcutaneous inoculation. Notwithstanding the lower percentage of takes, the immunizing effect of intraperitoneal tumors is markedly greater than that of subcutaneous tumors. A subcutaneous tumor with markedly diminished virulence may exert a favorable influence on a second subcutaneous tumor of diminished virulence. In the same way, a subcutaneous and intraperitoneal tumor may, under certain conditions, mutually exert a favorable influence on each other.

The Rôle of Inflammation in the Immunity of Mice to Implanted Tumors

DR. E. E. TYZZER, Boston: The common mouse is found to be invariably refractory to the growth of implants of carcinoma derived from the Japanese waltzing mouse. Such implants, however, grow for a period of at least six days, during which they do not excite any marked inflammatory reaction. Following this period there is an inflammatory reaction, which is accompanied by the degeneration of the tumor tissue and its eventual disappearance. A comparative study was made of the tissue reaction around implants of this tumor into naturally immune common mice and into common mice which had previously been inoculated with the tumor. It was found that the inflammatory reaction was initiated at least three days earlier in the latter group, and that the destruction of the tumor graft also occurred much more rapidly. A study of the reaction of mice to a tumor of their own race in normal as compared with immunized individuals showed similar differences, although less pronounced. The mechanism of resistance and immunity to tumor implantation were discussed. The data acquired in the present study are interpretable on the theory of sensitization, that is, the production of material in the immunized animal which, in combination with the products of the living tumor cells, produces local injury which is most marked in the tissues surrounding the implant. The destruction of the tumor cells is secondary to this inflammatory reaction.

Transplantation of Tumors into Foreign Species

MR. CASIMIR FUNK, New York: Experiments were performed with the view of testing the validity of Ehrlich's

athreptic theory, which explains the failure of tumors to grow in foreign species by the fact that they lack their specific food supply. To test this hypothesis, two batches of rats were inoculated with a mouse chondroma, one batch being fed on this tumor for some time previous to the inoculation. In the control rats the mouse tumor failed to grow, but in those fed on tumor tissue, several tumors identical to the tumor which was inoculated were obtained. One of these tumors was transplanted back into mice and also into prepared rats. The mouse tumor was kept going in rats for three generations and for more than seven weeks.

Treatment of Parotid Tumors by Radium

DR. RICHARD WEIL, New York: A case of parotid tumor was treated successfully with radium in the memorial Hospital of New York. A number of favorable results have been reported in parotid tumors, through the application of radium. In no instance, however, has the microscopic character of the tumor been described. In the present instance, a small piece removed for examination was diagnosed by Dr. Ewing as adenoid cystic epithelioma. The appearance corresponds to that frequently described as cylindroma. The sections show epitheliallike cells arranged in cords which have extensively infiltrated and destroyed the muscle bundles. No tissues characteristic of the "mixed tumors" were discoverable. The patient was a woman aged 38. The tumor, which had been slowly growing for seven years, was seated in the parotid region and involved the entire lower half of the ear and the upper part of the neck behind the ear. It was firmly adherent to the deeper structures and in part to the skin. There was complete facial paralysis on the right side. The radium was inserted into the tumor through an incision, eighteen such applications being made. At the end or six weeks the tumor had practically disappeared. Up to the present time after an interval of more than one year there has been no evidence of a recurrence. The facial paralysis has not been removed.

Distribution of Radium A B C Injected into the Blood of the Rabbit

DR. WILLIAM DUANE, Boston: The injection of radioactive substances produces marked changes in the blood, a fact which has been therapeutically applied, as in leukemia. The experiments here reported aimed at a determination of the distribution in the body of radium A B C after injection. Radium emanation is allowed to deposit radium A B C on common salt, which is then dissolved in distilled water. The radium in the tissues was measured by an apparatus similar to that used in Paris to measure the international standards of radium. The radium solution was injected into the ear vein of rabbits, and the estimations made one hour later. The kidneys and the urine contain per weight much more radium A B C than does the blood, indicating rapid excretion. The liver and spleen contained several times as much radium as the blood, showing a tendency to deposit in these organs.

Chemotherapeutic Experiments on Tumors

DR. RICHARD WEIL, New York: Dyes of the benzidin group are not taken up by the living tumor cells of animals, either mice or rats. The necrotic portions of these tumors, however, take up the dyes of this group with considerable avidity. After intravenous injection, the necrotic parts of the tumor appear to be stained more intensely than any other tissue except perhaps the liver. The process of staining is not one of simple diffusion, inasmuch as these dyes are colloidal. It is possible that the relatively intense staining of these areas is simply due to a defective vascular supply which results in the less perfect removal of the dye. Many of the dyes undergo a change in color in the necrotic areas which is similar to the metachromasia seen in staining amyloid. Similar color changes could be produced in the test tube by adding solutions of certain amino-acids to the dyes. Compounds of certain dyes, notably Congo red, with copper, selenium, mercury and liquor formaldehydi, were injected intravenously into rats carrying tumors, but no therapeutic effects were observed.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

April, XXXVI, No. 4, pp. 151-200

1 True and False Economy in Care of Insane. T. W. Salmon, New York.
2 Scope of School Medical Inspection with Special Reference to New York State Under Mandatory Law. C. P. McCord, New York.

American Journal of Orthopedic Surgery, Philadelphia

April, XII, No. 4, pp. 555-833

3 *Osteochondritis of Upper End of Femur (Perthes' Disease). F. Delitala, Bologna, Italy.
4 *Tuberculosis of Knee-Joint in Adults; Prognosis and Treatment. M. H. Rogers, Boston.
5 Tuberculosis of Knee-Joint in Childhood. J. W. Sever and E. W. Fiske, Boston.
6 Tuberculosis of Hip. Analysis of Twenty-Five Cases. N. Allison, St. Louis.
7 Management of Convalescent Stage of Hip Disease. G. B. Packard, Denver.
8 Case of Pott's Paraplegia with Complete Paralysis Lasting for Five Years, with Recovery after Treatment. J. E. Goldthwait, Boston.
9 *Spontaneous Dislocation of Hip. J. Ridlon, Chicago.
10 Joint Syphilis in Children. J. A. O'Reilly, St. Louis.
11 Hitherto Undescribed Dystrophy, Probably of Luetic Origin, Affecting Particularly Joints of Lower Extremities. C. F. Eikenbary, Spokane, Wash.
12 *Treatment of Rheumatoid Arthritis of Hypertrophic Type. J. L. Porter, Chicago.
13 Simple Method for Forcible Traction on Each Leg While Applying Plaster Casts. P. Le Breton, Buffalo.
14 Importance of Vascular Conditions in Orthopedic Cases. H. W. Marshall, Boston.

3. **Osteochondritis of Upper End of Femur (Perthes' Disease).**—Perthes' disease is rare. In over 1,500 cases of hip affection, of orthopedic nature, it was found by Delitala in six cases only, which represents an average of 4 per thousand. It is not seen in infants. It occurs from 3 to 10 years of age. It is characterized clinically by atrophy of the joint, imitation of abduction, raising of the greater trochanter, shortening hardly noticeable, Trendelenburg sign, claudication; roentgenographically by a deficient and irregular development of the cephalic neck and by minimum alterations of the acetabulum. Differential diagnosis requires a complete exclusion of congenital dislocation of the hip, coxa vara, tubercular coxitis, and infantile deforming arthritis. Tuberculosis, the infectious disease in general and trauma, cannot be taken into consideration as pathologic causes. The origin of the disease must be looked for in a congenital alteration, either of the epiphyseal cartilage of the upper end of the femur or of the epiphyseal nucleus, which gives way to processes of ossification which are insufficient and irregular. From this point of view Perthes' disease is similar to congenital coxa vara.

4. **Tuberculosis of Knee-Joint in Adults.**—Rogers has never observed any bone lesion or focus within the first year of the onset of the symptoms, except in one case. This case showed early in the disease a focus in the head of the tibia, before there was a clinical evidence of capsular or joint involvement, which was exposed extra-articularly, supposedly as an osteomyelitic process. Within a year the process extended into the joint and involved the cartilaginous surfaces of the tibia and femur, when an excision was done. The microscopic examination showed tuberculosis. This the only case out of twenty that started, as far as clinical evidence goes, with a bone focus. Rogers is convinced that conservative treatment in adults is not productive of good results. Inasmuch as an exact diagnosis is often impossible within the first year of the disease without an exploratory arthrotomy, therefore, unless some other method of arresting the disease is found, excision is justifiable as early as the diagnosis can be made.

9. **Spontaneous Dislocation of Hip.**—The object of Ridlon's paper is to advocate the use of the term spontaneous dislocation, for that of congenital dislocation which has been in general use up to this time.

12. **Treatment of Rheumatoid Arthritis.**—Porter's routine method of treatment in these cases has been: 1. Hypodermic of ¼ grain morphin with atropin five minutes before the injection. 2. Local anesthesia over and into the diseased joint by novocain infiltration. 3. Injection of 2 per cent. of olive-oil-formaldehyd solution until the patient begins to feel the joint becoming distended. 4. Immediate immobilization in plaster cast. The acute pain which follows the injection usually subsides in fifteen to thirty minutes and is very rarely bad. The cast is removed in two to four weeks, depending on the sensitiveness of the joint at the time of the operation. In very painful cases Porter leaves it on longer. If pain and tenderness have entirely subsided, he does not make another injection. If not, a second one is given. In most cases only one is necessary, in some cases two are required and in a very few cases more than two. In cases in which there is more than a trace of indican in the urine, or any history of chronic flatulence, Porter excludes all animal proteins absolutely except buttermilk. In nearly all cases he has treated in the past two years he has also given a tablet of desiccated thymus gland four times daily.

American Journal of Roentgenology, Detroit

January, II, No. 3, pp. 581-632

15 *Roentgen Diagnosis of Lesions of Vermiform Appendix. H. M. Imboden, New York.
16 *Observations from Study of Thousand Gastro-Intestinal Cases. A. W. George and I. Gerber, Boston.
17 Losses in Transmission as Source of Error in Roentgen Ray Dosage. J. G. Van Zwaluwenburg, Ann Arbor.
18 Case of Fracture Confined to Petrous Portion of Temporal Bone. E. B. Gleason and G. E. Pfahler, Philadelphia.
19 Calcareous Cyst of Kidney. J. T. Case, Battle Creek.

15. Abstracted in THE JOURNAL, Oct. 3, 1914, p. 1228.
16. Abstracted in THE JOURNAL, Oct. 17, 1914, p. 1419.

Archives of Internal Medicine, Chicago

April, XV, No. 4, pp. 501-644

20 *Dead Space in Moderate and Large Respiratory Ventilation. C. F. Hoover and J. E. Gammon, Cleveland.
21 *Occurrence of Nuclear Particles in Erythrocytes Following Splenectomy. R. S. Morris, Clifton Springs, N. Y.
22 *Age Incidence in Sarcoma. C. V. Weller, Ann Arbor, Mich.
23 Study XXIII. Relation Between Amylase Retention and Excretion and Non-Protein Nitrogen Retention in Experimental Uranium Nephritis. R. Fitz, Boston.
24 *Studies of Renal Function in Renal, Cardiorenal and Cardiac Diseases. L. G. Rowntree, E. K. Marshall, Jr., and W. A. Baetjer, Baltimore.
25 *Effect of Sodium Salicylate on Various Types of Experimental Arthritis. D. J. Davis, Chicago.
26 Roentgenographic Study of Thorax, Thoracic Wall and Thoracic Viscera. L. B. Bibb and C. E. Gilliland, Austin, Tex.
27 *Metastatic Calcification. H. G. Wells, Chicago.
28 *Studies in Pancreatic Disease. B. B. Crohn, New York.
29 *Differential Study of Coccidioidal Granuloma and Blastomycosis. P. K. Brown and W. T. Cummins, San Francisco.
30 *Specific Gravity of Human Body. C. D. Spivak, Denver.

20. **Dead Space in Respiratory Ventilation.**—The optimum of respiratory volume is about 1,200 c.c. When the respiratory volume is increased beyond this amount Hoover and Gammon claim that the effectiveness of lung ventilation does not increase proportionately with the increased ventilation. It is the want of diffusion of carbon dioxid in large respiratory excursions which has given rise to the error of supposing the dead space to be increased in exercise. The authors show that on the basis of measured ventilation and the results in diluting the residual air, forced breathing is not effectual in ventilating the lungs in proportion to the increasing amounts of ventilating air. And conversely, when the amount of residual air is estimated on the basis of ventilatory results, the amount of residual air can be estimated with some accuracy when moderate amounts of air are inhaled, but with forced breathing, the residual air cannot be estimated from the measured results of ventilation.

When the dead space is artificially increased, the results of ventilation are not at all consistent with the ventilatory results which are ascribed by other investigators to an increase in the dead space in large respiratory excursions. The inefficiency of large respiratory excursions contributes more to the limitations of endurance in exercise than do limitations in the circulatory system. The authors claim also that their results prove the manner in which operative interference contributes to the relief of emphysema. Relief is not procured by diminishing the amount of residual air, whose carbon dioxid is diluted by respiration. Improvement is procured from the operation by restoring the ventilatory effectiveness of moderate respiratory volumes, the improvement from Freund's operation is due to diminution of the size of the lobules of the lung and not to changes in rigidity of the chest wall.

21. **Occurrence of Nuclear Particles in Erythrocytes.**—The relationship between the occurrence of nuclear particles in the erythrocytes and complete (or partial) loss of splenic function, if such there be, remains to be demonstrated. The results in Morris' three cases and in Roth's are suggestive. Morris suggests that it may be found that this is a characteristic blood change following removal of the spleen: for, unless one's attention were directed to them, it would be difficult to detect scattered nuclear particles in the course of the usual examination. It is not suggested that the finding of nuclear particles in the erythrocytes means absence of splenic function, for nuclear particles are not uncommon in various diseases of the blood.

22. **Age Incidence in Sarcoma.**—An analysis of 265 cases of sarcoma was made by Weller. The incidence was greatest at the age period 48 to 52. After this period the sarcoma incidence gradually decreases. There was no marked difference in the age distribution of sarcoma in males (129) and in females (136). Although in youth sarcoma incidence is somewhat higher than carcinoma incidence, there is throughout life a marked parallelism between the age incidence curves for the two types of malignancy, and for more than twenty years there is a practical coincidence, strongly suggesting that the causal or predisposing agencies in the two cases must either be identical or have much in common.

24. **Renal Function in Renal, Cardiorenal and Cardiac Diseases.**—The authors summarize their paper as follows:

The quantitative estimation of the diastatic activity of the urine as it is employed at present shows low values in the majority of cases of mild and severe nephritis, while in cardiac and cardiorenal cases the diastase findings are bizarre. Owing to the frequent occurrence of normal diastatic values in cases in which considerable or grave renal functional involvement is unquestionably present, and of low diastatic values which are not in accord with the clinical course of the case or with findings of other functional tests, no diagnostic or prognostic significance attaches to this test, other than that which is corroborative in character. As a single test it is unreliable. Further data as to the influence of albumin on the "d" value are desirable. The phthalein test is the one of choice and unquestionably the most valuable single test in this group of cases. The total nonprotein N and urea content of the blood are of about equal value in severe cases, while the freezing point of the serum is probably of somewhat less value since depression in the freezing point is lacking in several instances in which one or both of the other tests indicate that retention is present. Both tests of excretion and of retention are valuable. In all cases a phthalein test is advisable. *Wherever the phthalein output is decreased even but slightly the total nonprotein nitrogen or the blood urea or both should be determined.*

25. **Effect of Sodium Salicylate on Various Types of Experimental Arthritis.**—It is clear from the several series of experiments reported by Davis that sodium salicylate does not exert a favorable effect on infections in rabbits caused by various types of streptococci under the conditions detailed. It does not prevent localization of the organism in joints, nor does it prevent the appearance of endocarditis. It would seem to have, therefore, no prophylactic value, nor does it alter the course of the infection after it has once become established.

27. **Metastatic Calcification.**—Wells reports a typical case of metastatic calcification, resulting from bone destruction in myelogenous leukemia, making the thirty-second case of

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metastatic calcification found recorded. Of particular prominence and significance in this case are the heavy calcium deposits in the endocardium of the left side of the heart, the intima of the pulmonary veins and of the cardiac arteries, which illustrates as by a natural experiment the importance of the carbon dioxid of the blood in the transportation of calcium. When bone tissue is being rapidly absorbed, the venous blood becomes loaded with a greater amount of calcium (probably in the form of tribasic calcium carbon-phosphate) than arterial blood can hold in solution. Hence in this case of metastatic calcification no calcium is found in the right side of the heart or in the pulmonary arteries, but when the blood has passed through the lungs and lost a large part of its carbon dioxid, the calcium salts are precipitated in the pulmonary veins, the left heart and the arteries and taken up by the adjacent tissues.

28. **Pancreatic Disease.**—The quantitative examination of duodenal ferments according to Crohn is the most rational and accurate method of studying the external secretion of the pancreas. Diminution of such enzyme activity of the pancreas is a reliable sign of organic disease of the gland. Occasionally, though rarely, a diminution of ferments occurs as a symptom of advanced organic disease elsewhere in the body. Roughly, the diminution of ferments is directly proportional to the extent of organic destruction which has taken place. The absorption of fat and nitrogen from the intestine, Crohn says, is independent of the condition of the external secretion, or even of its presence. Absorption may be poor with an intact gland, or good with a gland of which only a fragment survives the disease. The functional activity of the gland, not its organic condition, determines the degree of absorption; this is probably controlled by an internal secretion or hormone. Duodenal ferment tests give the index of the organic condition of the gland. Absorption tests give the index of the functional activity of the pancreas.

29. **Study of Coccidioidal Granuloma and Blastomycosis.**—Brown and Cummins pointed out that there are well-defined differences in the pathogenicity of the two diseases, coccidioidal granuloma being always fatal, and often rapidly fatal in man, while blastomycosis is commonly not so, except for the systemic cases, in which the organisms were found associated with bacteria of known and unknown pathogenicity (Zinsser, Hektoen, Gilchrist and Stokes). The clinical and pathologic aspects of coccidioidal disease are those more closely resembling tuberculosis, as there is a greater predilection for the lymphatic system than there is in blastomycosis and cutaneous lesions are likely to be more ulcerative. There appears but one reported case of coccidioidal disease in the female sex, whereas there have been many of blastomycosis. Iodids have temporarily benefited many, and apparently cured a few, blastomycosis patients, whereas they have had no effect on the rapidly progressive lesions and toxemia of coccidioidal granuloma.

In the reported cases of coccidioidal granuloma and blastomycosis confusion is common as to clinical, pathologic and bacteriologic characteristics. The two organisms appear closely related, having much in common, but with such differences as to justify the conclusion that they are distinct entities. Morphologically, in pus and solid tissues they are differentiable by the endosporulation in the one and budding in the other. Cultural differences are not so pronounced, although the authors have found that growth is initally more rapid with coccidioides. Blastomycetes appear to grow best at room temperature (20 C.); coccioides at 37 C. The table of dyes shows some differences in inhibition of growth. Rabbits and guinea-pigs are more resistant to blastomycetic than to coccidioidal infection. The authors are of the opinion that these appear to be sufficient reasons to justify the consideration of coccidioidal disease and blastomycosis as two different diseases. A second paper dealing with the diseases from serologic, vaccine and chemotherapeutic points of view is promised.

30. **Specific Gravity of Human Body.**—Volumetric measurements were taken by Spivak of fourteen individuals, four adults (three males and one female) and ten boys, ranging in ages between 53 and 8 years; in weight from 79 kg. to 26 kg., and in height from 1.71 meters to 1.35 meters. All the measurements were taken at 7 p. m. before the evening meal. The specific gravity of the entire body ranged between 0.976 and 1.049. The average specific gravity of the adults was 1.003, and of the boys, 1.006. The average specific gravity of all individuals examined was 1.005. One of the subjects was placed on a certain diet and his displacement measured every other day, when he weighed 175, 174 and 173 pounds, respectively. The individual enters the bath and is first immersed to the navel line only, next to the nipple line, then to the prominence of the thyroid cartilage. He gradually accustoms himself to his new surroundings—to the tank and the water. Hearing each time the reading of the amount of water which each section of the body displaces, by the time the last dip is made, the immersion of the head, all fear and trepidation vanishes. Spivak claims that in order to reduce the errors to a minimum, the tank must be made of the smallest possible diameter compatible with carrying out the experiment. The smaller the tank the smaller the error.

Archives of Pediatrics, New York

March, XXXII, No. 3, pp. 161-240

31 *Some Sources of Error in Diagnosis and Treatment of Lobar Pneumonia in Childhood. E. C. Fleischner, San Francisco.
32 Dietetics of Eczema. G. D. Lyman, San Francisco.
33 Morbidity and Mortality of Associated Charities Feeding Clinic—San Francisco. F. M. Holselaw and A. E. Rude, San Francisco.
34 *Benzol Treatment in Case of Lymphatic Leukemia, with Autopsy. A. E. Meyers, San Francisco.
35 Acute Pyelitis. Cause of Obscure Fever in Infancy. E. J. Wood, Wilmington, N. C.
36 Two Cases of Parapneumonic Empyema in Children. L. W. Sauer, Chicago.
37 Case of Bell's Palsy. M. J. Synnott, Montclair, N. J.

31. **Error in Diagnosis of Lobar Pneumonia.**—Fleischner says that if one agrees that ice is of use in treating pneumonia in adults there is no question that it has value in treating pneumonia in older children. The prejudice against ice in pneumonia is far from justified. It is used commonly by medical men in treating meningitis, endocarditis, appendicitis and peritonitis. Why then should it not be used in pneumonitis? If ice is not useful in the external treatment of pneumonia, what is? Essentially nothing. With the exception of the occasional application of light mustard pastes as an aid to the failing heart, all poultices are of paramount danger. Kaolin pastes used in this disease are not only without therapeutic value, but they are a source of harm and damage.

The frequent employment of so-called expectorant cough mixtures is more than deplorable in the early stages of pneumonia. There is nothing for the patient to expectorate and the noxious substances, such as ipecac and chlorid of ammonia, put into the stomach only serve to disturb the gastro-intestinal tract and take away what may be left of the already markedly diminished appetite. Steam is sometimes used to lessen the irritating cough, but unless there is considerable inflammation of the larynx its value is very questionable. It has the decided disadvantage of necessitating the closing of windows during its use and for a considerable period after its use. In no acute disease does the question of heart stimulants assume the importance that it does in pneumonic infections, and in no disease likewise is overstimulation so frequently employed.

An old, wornout horse is never whipped, nor is it advisable to whip or overwork a wornout heart. In the treatment of heart complications opium occupies a position that is secondary to no other form of medication. Oxygen, especially in cases in which the cyanosis is profound, is of unquestionable value and must be used constantly. Camphor in the form of the sterilized oil seems at times to produce results, and ammonia given as the aromatic spirits also occasionally seems beneficial. If the blood pressure were materially lowered in pneumonia epinephrin should be of value, but it is rarely lowered. Caffein defeats its own purpose, because it overstimulates the nervous symptoms

so that the little value that the heart receives is more than counterbalanced by the irritation of the cerebrum that follows its use. Strychnin has been proved absolutely valueless. Atropin should be administered to those cases in which there is a tendency to pulmonary edema.

34. **Benzol Treatment in Case of Lymphatic Leukemia.**—In the case cited by Meyers there was a gradual reduction of the white blood cells with comparatively small doses of benzol, with a complete reversal of the picture of the white blood cells as it appears in cases of leukemia not treated with benzol. With the exception of the blood picture there were no other signs of benzol poisoning. Apparently good results were obtained while the patient was receiving benzol, 3 minims, four times daily.

Boston Medical and Surgical Journal

April 22, CLXXII, No. 16, pp. 575-612

38 *Leprosy, with Especial Reference to Pulse and Temperature. (To be continued.) J. A. Honeij, Boston.
39 *Skeletal Cancer or Bone Metastases. E. H. Risley, Boston.
40 Corsets, Ptosis and Sacro-Iliac Strain. R. M. Green, Boston.
41 Case of Osteomyelitis with Necrosis of Entire Femur and Spontaneous Fracture Treated by High Amputation, Leaving Boneless Yet Practical Stump for Attachment and Working of an Artificial Limb. A. H. Tuttle, Boston.

38. **Leprosy, with Reference to Pulse and Temperature.**—Seventeen patients have been under Honeij's observation for various periods during two years, and fourteen patients have been under constant observation for eighteen months. The study of the temperature and pulse has given definite results and the following points are presented: 1. There occurs a definite clinical temperature and pulse curve diagnostic and prognostic of leprosy. 2. There is a frequent and persistent occurrence of a high morning pulse rate—"morning pulse" in all cases. 3. A constant high pulse rate is most marked in progressive and advanced cases. 4. A persistent high pulse rate without a corresponding elevation of temperature of prolonged duration is found after "toxic-febrile" attacks. 5. There is a correlation of temperature and pulse in early cases, in contrast to a gradual increase of pulse rate without similar temperature reactions in progressive and advanced cases. 6. Not uncommonly a low evening temperature is present. 7. A marked irregularity in temperature and pulse exists during complications not associated with leprosy. 8. There are typical "toxic-febrile" temperature and pulse curve reactions. 9. Marked temperature and pulse reactions occur from otherwise insignificant causes, both physical and mental.

39. **Skeletal Cancer or Bone Metastases.**—This subject has been reviewed by Risley and he gives the following facts of importance in regard to metastatic bone cancer: 1. Metastasis takes place probably by centrifugal spread along the lymphatic plexus of the deep fascia in most cases. 2. Bone metastases occur almost entirely in the areas of the body subject also to skin nodule metastases, namely, everywhere proximal to the elbow and knee joints. Bones distal to these joints are rarely involved. 3. Metastases are more common after cancer of the breast than any other organ. The prostate and thyroid being the next most common. (Hypernephroma of the kidney is not considered in this series). 4. The liability of a bone to cancerous invasion increases with its proximity to the site of the primary focus. Thus the sternum and ribs are affected about equally and more frequently than any other bones. The spine, femur, humerus, pelvic and cranial bones come next. 5. The character of the secondary lesion always corresponds to that of the primary growth. 6. The frequency after cancer of the prostate may be as high as 25 per cent. 7. The vertebrae are the favorite seats of attack in scirrhus of the breast. 8. The percentage of vertebral metastases is nearly 25 per cent. 9. Spontaneous fracture is present in about 24 per cent. 10. Pain is the only characteristic symptom. 11. Visible or palpable tumor is rare, while spontaneous fracture is quite common.

Risley says that the following points may be set down as diagnostic aids: Any fracture of a long bone occurring as a result of trivial injury should immediately suggest the possibility of bone metastases and lead to careful search for the primary new growth. In all cases of painful paraplegia a neoplasm should be suspected. A diagnosis of primary bone tumors should never be made without careful examination of the abdomen, mammary glands, prostate and thyroid for malignancy. It is rare that careful search will fail to reveal the primary focus.

California State Journal of Medicine, San Francisco

April, XIII, No. 4, pp. 129-168

42 Reduction of Diphtheria Morbidity. W. A. Sawyer, San Francisco.
43 *Hematogenous Kidney Infections. G. MacGowan, Los Angeles.
44 Suprapubic Prostatectomy and Some of Its Results. M. Molony, San Francisco.
45 Carrier Problem in Diphtheria. W. H. Kellogg, San Francisco.
46 Retrodisplacement of Pregnant Uterus. L. I. Breitstein, San Francisco.
47 Case of Pellagra. W. W. Kerr, San Francisco.

43. **Hematogenous Kidney Infections.**—To prevent disappointment, MacGowan says, it is best to look on tuberculin as of assistance in the treatment of tuberculosis of the kidney and not as a specific remedy therefor. In forming an opinion of its value use as a base the reports of those who have had the patience to use it, over long periods of time, on numerous cases that have answered to the requirements of a perfect diagnosis: the direct demonstration of tubercle bacilli in an acid purulent urine received in a sterile container from a sterile ureteral catheter introduced into the pelvis of the kidney of a person afflicted with polyuria, dysuria, or both, or the development in a guinea-pig inoculated with the sediment of this urine, of tuberculosis at the point of inoculation.

The evidence of experienced operating surgeons who have frequently nephrectomized such patients with a low mortality both immediate and remote, yet who have had the courage thoroughly to test out the merits of tuberculin, is the best evidence of all, for they know and appreciate better than others the unreliable history of the disease and its unaccountable vagaries—how the individual develops a marked resistance to reinfection both from within and without, accounting for the slow progress of renal tuberculosis, its remissions of disturbing symptoms, and sometimes of apparent cure for months and for years, by the encapsulation and sealing up of the abscess cavity, thus introducing an element of doubt always into the origin of any favorable results following the use of tuberculin in these cases. It is not a matter of much importance what particular preparation of tuberculin is used. The dose, however, is not a matter of indifference. It should be small, always very small, at first. One that will equal 1/1,000,000 to 1/100,000 mg. of old tuberculin is always sufficient to start with and it should be raised very gradually, avoiding the occasioning of a local or general reaction. The intervals of its administration should be four or five days. Used in this way it helps many and injures none.

Canadian Medical Association Journal, Toronto

April, V, No. 4, pp. 277-372

48 Artificial Pneumothorax in Treatment of Tuberculosis. (To be continued.) C. D. Parfitt and D. W. Crombie, Gavenhurst.
49 *Vaccine Treatment of Bacterial Diseases of Lungs Complicating Pulmonary Tuberculosis. F. W. Wittich, Kamloops, B. C., Canada.
50 *Blood Transfusion in Infants and Young Children. L. B. Robertson and A. Brown, Toronto.
51 Dislocation. G. P. Girdwood, Montreal.
52 *Curative Value of Tetanus Antitoxin. Report of Case. J. G. Fitzgerald, G. W. Ross and E. Z. Stirrett, Toronto.

49. **Vaccine Treatment of Bacterial Diseases of Lungs Complicating Pulmonary Tuberculosis.**—Vaccine therapy of these secondary infections is said by Wittich to be only an adjunct in the treatment of pulmonary tuberculosis. The primary treatment in all these cases is rest, fresh air and diet, with tuberculin in suitable cases. Certain cases will improve much faster under this treatment, and it has been the turning point of the disease in some. In an examination of the sputum of 196 patients, the pyogenic organisms predominated and their frequency was noted. The hemolytic

streptococcal group usually manifested the severest clinical symptoms, and asthma was frequently present. This group responded particularly well to vaccine. In a certain number of cases of pulmonary tuberculosis, the secondary organisms play an important rôle. They may be the primary infection predisposing to tuberculosis, or their presence may accelerate the growth of tubercle bacilli to such an extent that a better term for these cases would be "mixed infections." Wittich states that the discouraging results of vaccine therapy in the hands of many are due to faulty technic in their preparation and administration. As the preparation of homologous vaccine from the sputum of tuberculous cases is attended with difficulty, a practical and efficient method for obtaining the same is described.

50. **Blood Transfusion in Infants and Children.**—Properly safeguarded, transfusion, according to Robertson and Brown, is not a dangerous operation. The withdrawal of too much blood from the donor and the dilatation of the recipient's heart are usually avoidable mishaps. The introduction of air bubbles both large and small, contrary to the general opinion, have caused absolutely no harm. Experimentally this observation has been confirmed by one of the authors when almost a syringeful (10 c.c.) of air was introduced into a dog's femoral vein, producing only a momentary cyanosis and then complete recovery, with apparently no bad after-effects.

The amount transfused may be controlled to a certain extent by the estimation of the hemoglobin, but it must be borne in mind that the introduction of whole blood acts as a stimulus to the hematopoietic organs, with a result that from twelve to fourteen hours following the cessation of transfusion the hemoglobin may read from ten to thirty points higher. The average duration of the flow of blood in the cannula method is from three to six minutes, while with the syringe method the quantity can be accurately estimated. In a newborn infant from 90 to 120 c.c. is sufficient to stop the bleeding and restore almost half the total quantity of blood. In an infant 3 months of age, naturally depending on the degree of exsanguination, a larger amount is required.

52. **Value of Tetanus Antitoxin.**—This communication deals with the value of tetanus antitoxin as a means of treatment in well developed cases of tetanus, when properly administered; and when given in sufficiently large doses. The authors report two cases in which exceedingly satisfactory results have been obtained. One patient was given 24,000 units of antitoxin intravenously and 3,000 intraspinally; the other received 52,500 units intravenously.

Journal of Parasitology, Urbana, Ill.

March, I, No. 3, pp. 107-158

53 Spider Poison. V. L. Kellogg, Stanford University, Cal.
54 Sarcosporidia Encountered in Panama. S. T. Darling, Ancon, C. Z.
55 Otacariasis in Bighorn. H. B. Ward, Urbana.
56 Tocotrema Lingua (Creplin). E. Linton, Washington, Pa.
57 Habits, Life History and Structure of Blood-Sucking Muscid Larva (Protocalliphora Azurea). A. F. Coutant.
58 Experiments on Cysticerci of Tenia Pisiformis Bloch and of Tenia Serialis Gervais. J. E. Ackert, Topeka, Kan.

Lancet-Clinic, Cincinnati

April 10, CXIII, No. 15, pp. 397-424

59 Modern Electrocardiography. J. E. Benjamin, Cincinnati.
60 Inlay Bone Graft in Treatment of Fractures, Joint Tuberculosis and Certain Deformities. F. H. Albee, New York.
61 Climate of Reno, Nevada, Compared with Other Resorts. J. R. Williams, Reno, Nev.
62 Experiences in Anoci-Association. C. G. Crisler, Cincinnati.
63 Pulmonary Tuberculosis Treated by Artificial Pneumothorax. A. G. Shortle, Albuquerque, N. M.

April 17, No. 16, pp. 425-452

64 External Bone Plating. H. R. Allen, Indianapolis.
65 Case of Poliomyelitis of Meningitic Type. C. W. Hitchcock, Detroit.
66 Treatment of Compound Fractures. F. W. McGuire, Buffalo.
67 Old Dislocation of Head of Radius, with Fracture of Ulna—Corrected by Lane Bone Plate. F. Fee, Cincinnati.
68 Nervous Diseases Among Jews. W. Ravine, Cincinnati.
69 Surgical Principles in Care and Feeding of Infants. A. I. Carson, Cincinnati.
70 Heart in Life Insurance. J. S. Lankford, San Antonio, Tex.

Medical Record, New York

April 24, LXXXVII, No. 17, pp. 673-714

71 Astasia-Abasia. J. Collins, New York.
72 Psychic Therapy, Clinical Psychology, and Layman Invasion. J. V. Haberman, New York.
73 Indications for Treatment of Heart Diseases. R. Abrahams, New York.
74 Suggestions in Handling Cases of Diabetes Mellitus. H. Blum, New York.
75 Latest Investigations Regarding Syphilis and Salvarsan. S. Steiner, New York.
76 Belgian Red Cross Hospitals of Dr. Depage. C. L. Gibson, New York.

New York Medical Journal

April 24, CI, No. 17, pp. 817-868

77 Contrast Between Surgery of Civil War and That of Present War. W. W. Keen, Philadelphia.
78 Circumscribed Serous Meningitis. T. A. Williams, Washington, D. C.
79 Types of Malignant Endocarditis. J. M. Patton, Chicago.
80 Apparatus for Ambulatory Treatment of Fracture of Tibia. C. Savini, New York.
81 *Tobacco Heart. H. Brooks, New York.
82 Psychopathology of Neurosis. B. Sidis, Portsmouth, N. H.
83 Treatment of Acute Surgical Infections. E. R. Secord, Brantford, Ont.
84 Superdiagnosis. A. G. Huegli, Detroit.
85 Complement Fixation for Syphilis with Cholesterin Antigens. L. H. Cornwall, New York.
86 Syphilitic Aortitis. J. Epstein, New York.

81. **Tobacco Heart.**—If experimentation, pharmacology and clinical observation have taught one single fact about the action of tobacco, Brooks states, it is that its effects, while occasionally very dangerous, are evanescent. He advises against the use of tobacco in cases of angina pectoris, for the reason that the action of the drug adds to the existence of diseased coronary arteries, its pharmacologic effect, claudication. Clinical experience bears out this restriction. Furthermore, Brooks is inclined to the opinion that as a result of this claudication, progression of a localized arteriosclerosis may be favored.

In any instance in which the effects of tobacco on the pneumogastric produce symptoms of cardiac embarrassment, entirely irrespective of the heart lesion, whether it be pericardial, myocardial, or endocardial, the drug should be given up, or used only in such doses that no indications of disturbance occur. Each case should be considered a problem by itself. In cases in which a patient desires to use tobacco moderately, one is not justified in denying him a very real and definite pleasure and consolation until it has been tried out on him. If disagreeable or bad symptoms are produced it is a very simple matter to cut out tobacco. If, on the other hand, no symptoms are produced, since we have the prepondering weight of evidence on the side that tobacco does not produce anatomic changes in the tissues, Brooks does not believe that we are justified in denying the patient what we cannot intelligently explain. The advice is that, except in angina pectoris, whether tobacco may or may not be used depends on the effects which its use, not abuse, produces on the individual.

There is no clinical or experimental evidence that disease of the heart muscle is caused by tobacco, save for possible changes in the papillary muscles, probably explainable on a mechanical basis. The fact that all symptoms disappear when tobacco is discontinued, seems to confirm this statement. There is neither clinical nor anatomic evidence sufficient to indicate that true coronary sclerosis may be caused by tobacco, though it is highly probable that when this condition exists, the symptoms are accentuated by it. Tobacco angina is promptly relieved by discontinuation of tobacco; no such result can be obtained in true angina pectoris. It is probably unwise to permit the use of tobacco in circulatory diseases when symptoms of cardiac embarrassment occur.

New York State Journal of Medicine

April, XV, No. 4, pp. 129-166

87 Some Acute Surgical Diseases of Abdomen in Children. L. M. Kahn, New York.
88 Relation of Ophthalmology to General Practice. E. W. Jones, Watertown.

89 Some Observations, Therapeutic and Otherwise, From General Practitioner. M. J. Wilson, Warsaw.
90 Surgical Service at Buffalo General Hospital. F. J. Parmenter and B. F. Scareiner, Buffalo.
91 Twilight Sleep; Report of Two Hundred Cases. S. J. Druskin and N. Ratnoff, New York.
92 Clinical Relations of Ductless Glands. S. W. Little, Rochester.
93 Problem of Surgical Clinic as it Relates to Clinic Worker. A. J. Brown, New York.
94 Half Century of Medicine and Surgery. G. E. Blackham, Dunkirk.

Ohio State Medical Journal, Columbus

April, XI, No. 4, pp. 211-292

95 Exophthalmic Goiter: Symptoms and Diagnosis. W. H. Lewis, Newark.
96 Chronic Pyelitis; Its Cause, Clinical Course and Treatment. F. C. Herrick, Cleveland.
97 Twilight Sleep, Series of Twenty Private Cases. J. Gardiner, Toledo.
98 Pyloric Stenosis in Infancy. A. Crotti, Columbus.
99 Obstructions at Outlet of Urinary Bladder. E. O. Smith, Cincinnati.
100 Cooperation of Physicians and Dentists in Conservation of Health. J. H. J. Upham, Columbus.

Southern Medical Journal, Mobile

Omitted from March, VIII, No. 3, pp. 173-252

101 Differentiation of Diseases Associated with Splenomegaly. W. H. Deaderick, Hot Springs, Ark.
102 Report of Experimental Work in Prevention and Treatment of Rabies by Drugs. F. A. Coward, Columbia, S. C.
103 Operative Correction of Harelip and Cleft Palate. W. A. Bryan, Nashville, Tenn.
104 Relation Between Surgical Infections of Gastro-Intestinal Tract and Asthma. J. S. Ullman, Natchez, Miss.
105 Amputation of Leg. D. Eve, Nashville, Tenn.
106 Treatment of Compound Fractures of Leg. T. H. Hancock, Atlanta, Ga.
107 Sarcoma of Nasopharynx. R. C. Dorr, Batesville, Ark.
108 Abscess of Frontal Lobe Secondary to Purulent Frontal Sinusitis; Report of Case with Recovery. F. P. Calhoun, Atlanta, Ga.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

April, XXIII, No. 4, pp. 89-133

109 Appendicitis in Children. M. B. Clopton, St. Louis.
110 Roentgen Ray Diagnosis of Diseases of Thorax. B. T. Van Zant, Houston, Tex.
111 Need for Greater Care in Surgical Diagnosis. A. E. Sweatland, Nacogdoches, Tex.
112 Prophylaxis of Joint Conditions in Childhood. C. B. Francisco, Kansas City, Mo.
113 Killian's Suspension Laryngoscope and Its Application in Diagnosis and Surgery of Larynx. S. Israel, Houston, Tex.

Tennessee State Medical Association Journal, Nashville

April, VII, No. 12, pp. 479-524

114 Anoci-Association in Theory and Practice. A. B. Cooke, Los Angeles.
115 Pyorrhea Alveolaris and Other Oral Sepsis and Relation of Physician and Dentist to Them. C. A. Sevier, Jackson.
116 Goiter. C. N. Cowden, Nashville.

Texas State Journal of Medicine, Fort Worth

April, X, No. 12, pp. 491-536

117 Surgical Treatment of Trachoma. W. R. Thompson, Fort Worth.
118 Management of Intestinal Obstruction in which Treatment Has Been Delayed. H. R. Dudgeon, Waco.
119 Left Iliac Colostomy as Operation of Expediency in Cases of Inoperable Rectovaginal Fistula Associated with Stricture of Rectum. F. L. Barnes, Trinity.
120 Causes and Treatment of Subinvolution in Puerperal Uterus. E. S. Gordon, Dallas.
121 Practical Method of Repair of Female Perineum. J. M. Inge, Denton.
122 More Common Affections of Urinary Organs Associated with Diseases of Female Pelvis. M. Duggan, San Antonio.
123 Modern Views of Etiology and Pathology of Rheumatism. J. S. Davis, Dallas.
124 Review of Pathology and Bacteriology Hodgkin's Disease. W. H. Moursund, Dallas.

West Virginia Medical Journal, Wheeling

April, IX, No. 10, pp. 327-362

125 Rights and Duties of Physician in Court. H. C. Hervey, Wheeling.
126 Conservation of Vision. B. F. Matheny, Clarksburg.
127 Laboratory Work and General Practitioner. S. L. Cherry, Clarksburg.
128 Etiology, Pathology and Treatment of Valvular Heart Lesions. D. T. Williams, Martinsburg.
129 Surgical Treatment of Disturbed Menstruation. J. A. Guthrie, Huntington.
130 Enormous Doses of Antitoxin in Infant. C. A. Fleger, Seth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London

April, XIX, No. 11, pp. 375-410

1 Roentgenoscopy of Colon. J. T. Case.
2 Women's Imperial Service League Hospital. F. A. Stoney.
3 System of Topography for Use in Roentgenography of Head. R. Knox and R. W. A. Salmond.

British Medical Journal, London

April 10, I, No. 2832, pp. 625-664

4 Wound Infections; New Methods in Treatment. (To be continued.) A. E. Wright.
5 *Cerebrospinal Meningitis. A. Lundie, D. J. Thomas and S. Fleming.
6 *Prophylactic Inoculation Against Tuberculosis. W. M. Crofton.
7 Method for Localization of Bullets. W. S. Lindsay.
8 *Treatment of Bites by Venomous Snakes. J. C. Fox.

5. **Cerebrospinal Meningitis.**—The authors conclude that lumbar puncture in competent hands is always justifiable, and it gives the only criterion by which to diagnose the third stage of the disease.

6. **Prophylactic Inoculation Against Tuberculosis.**—It has been Crofton's practice for the last eight years to urge the members of families whose parents were tuberculous, or in which cases of tuberculosis had occurred, to undergo a short course of tuberculin. The tuberculin he has used until lately is Koch's new tuberculin and the doses for adults have been, as a rule, 0.001 c.mm., 0.005 c.mm., and 0.01 c.mm. For infants 3 months old 0.0001 c.mm., 0.0005 c.mm., 0.001 c.mm. Sometimes further doses are given. There is sometimes a slight rise of temperature in the evening if the injection has been given in the morning, but otherwise no serious disability. The usual interval is seven days. The improvement in health in many of the members of tuberculous families thus treated has been most satisfactory, and so far no case has occurred among those who have been inoculated.

Some years ago Crofton discovered that tubercle bacilli would dissolve in benzoyl chlorid, and that this solution produced very marked focal and general reactions in tuberculous patients. When using it for therapeutic purposes, the initial dose had to be small—0.0000001 mg. in lung cases, 0.000001 mg. in extra-pulmonary cases. The highest dose that had to be attained was 0.01 mg. The clinical results have been so satisfactory that he now uses no other for therapeutic purposes. The doses are increased as follows: 0.0000002, 0.0000004, 0.0000006, 0.0000008, 0.000001, and so on. The dilutions are made in liquid paraffin, containing 2 per cent. benzoyl chlorid, and he generally adds 0.032 gm. iodoform dissolved in ether, so as to combine immuno- and chemotherapy. For prophylactic purposes the initial doses may be larger and the rises more rapid. At present Crofton uses the following series: 0.000001, 0.00001, 0.0001, 0.001 for infants; 0.00001, 0.0001, 0.001, 0.01, for older children, for adults an additional dose 0.1 may be used. The usual interval is a week. If after the initial dose there is a marked reaction, focal or general, then the immunization must be more carefully carried out, using the increments of dosage prescribed for treatment.

The benzoyl chlorid solution is made as follows: Ten milligrams living tubercle bacilli from the heaped-up growth in Dorset egg medium are weighed on an accurate chemical balance. The weighing is done on the under surface of the glass stopper of the bottle containing the 10 c.c. of benzoyl chlorid they are to be dissolved in. The masses of bacilli are broken up and mixed with a little of the benzoyl chlorid on the stopper. The stopper is then inserted into the bottle and shaken down into the fluid, which turns milky. The bottle is put in the incubator for twelve hours, and is shaken occasionally. The fluid gradually clears. The stock solution appears to keep a long time.

8. **Treatment of Bites by Venomous Snakes.**—Fox treats these cases by the injection of a full dose of cocain hydrochlorid into the punctures and immediate and continuous dosing with a solution of gelatin, 1 ounce to the pint. His results have been very good.

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Glasgow Medical Journal

April, LXXXIII, No. 4, pp. 241-319

9 *Lacerations of Maternal Tissues During Labor. J. N. Stark.
10 Chorea. (To be continued.) I. MacKenzie.
11 Agglutinating Power of Serum of Person Inoculated Against Enteric Fever. A. Patrick.
12 Case of Carcinoma of Stomach with Secondary Carcinoma of Bone Marrow. J. C. Middleton.

9. **Lacerations of Maternal Tissues During Labor.**—The following points are emphasized by Stark. 1. The pregnant woman deserves much more care and attention than she usually gets. 2. The primagravida ought to be examined two months before full time is expected, in order that the accoucheur may gain some knowledge of the size and form of her pelvis. 3. If the pelvis is found to be abnormally small or contracted, measures ought to be adopted so as to obviate the use of forceps above the brim. 4. When there has been exceptional trouble at the first confinement due to a small pelvis, unusually large child, or other like cause, then induction of premature labor in a future pregnancy is worth consideration, as an operation well adapted for performance by the general practitioner. 5. Forceps ought not to be applied above the brim of the pelvis. If the pelvis is contracted and the head cannot engage, cesarean section or craniotomy should be performed at an early, not a late stage of the labor. 6. In moderate degrees of contracted pelvis spontaneous delivery is safest for both mother and child. 7. In uterine inertia, pituitary extract is of value in the second stage. 8. Too early recourse to the use of forceps is to be discouraged. It should be a fixed and unalterable rule not to operate through an undilated cervix. 9. Lacerations of the perineum and vagina ought to be attended to in every case, and as soon as possible.

Journal of Tropical Medicine and Hygiene, London

April 1, XVIII, No. 7, pp. 73-84

13 Pyosis Corletti in British Soldiers. A. J. Chalmers and A. P. O'Connor.

Lancet, London

April 10, I, No. 4780, pp. 737-786

14 Wound Infections; New Methods in Treatment. (To be continued.) A. E. Wright.
15 War and Cholera. W. J. R. Simpson.
16 *Some Cases of Blood Infection by Anaerobic Organism Secondary to Wounds. A. Stokes.
17 Case Showing Frequent Occurrence of Auriculoventricular Rhythm Associated with Long A-C Interval. A. W. Falconer.
18 Case of Acholuric Jaundice. W. Harmens.
19 Cerebrospinal Meningitis; Meningococci Found in Peripheral Blood Films. A. C. Coles.
20 *Injection of Oxygen as Treatment for Tetanus. H. O. Howitt and D. H. Jones.

16. **Cases of Blood Infection by Anaerobic Organism Secondary to Wounds.**—The organism found by Stokes was a gram-positive bacillus, most of the bacilli taking the gram-stain well, a few individuals losing the stain, and a few showing a beaded appearance. The bacilli varied a good deal in length, forms longer than anthrax being common and forms as short as *B. coli* were found; it did not form spores in glucose-agar and died out in one week in that medium. In one culture capsules were stained; in the others they were apparently present, but it was not possible to stain the actual capsule. The colonies were dense and opaque, and on McLeod's plates made with blood glucose-agar they showed a distinct hemolytic power. The organism is nonmotile. It was possible by making use of the hemolysis to isolate the same microbe from two quite harmless wounds, one in the leg, the second in the thigh. One culture killed a guinea-pig in fifteen hours; another culture made a pig very ill, but it did not die; these were the only cultures injected into animals. There were a large number of cases presenting the same clinical picture in which it was not possible to make blood cultures to verify the diagnosis.

From the rapid onset of the symptoms Stokes suggests that the infection of the blood stream is either at the time of injury or very soon after it. The clinical picture was characterized by four separate features: (1) The color of the patient, which was a dirty yellow, something like the color of a dirty deal table; (2) the soft, running pulse, which was always rapid, often uncountable, and in the later stages irregular; (3) uncontrollable vomiting, and (4) the rapid onset of the condition after the injury. The presence of obvious gangrene at the site of the wound was inconstant; in three of the six cases reported it was present, in the remaining three it was absent. Death occurred in every case with great rapidity, forty-eight hours being the average time; one case survived eighty hours. The patient was always conscious to the end and in a state of "euphoria."

20. **Injection of Oxygen as Treatment for Tetanus.**—The only treatment used by the authors in experimental cases was the direct deep injection of oxygen into the wounds. In cases in which half a drop of culture was used for inoculation, tetanus developed and terminated fatally in the case of the control, but had not developed eighteen days later in cases in which oxygen was injected. In cases in which the amount of inoculum was double that used, tetanus developed with fatal termination in both cases, but the appearance of tetanic symptoms and subsequent death were considerably deferred by the one injection of oxygen.

Archives de Médecine des Enfants, Paris

March, XVIII, No. 3, pp. 125-180

21 *Malignant Syndrome in Infectious Diseases. V. Hutinel. Commenced in No. 2.
22 The Blue Spot in Brazilian Children. (La tache bleue mongolique à São Paulo.) C. Ferreira.

October, XVII, No. 10, pp. 721-800

23 *Congenital Tuberculosis. M. Pêhu and J. Chalier.
24 Asystole from Acute Dilatation of the Heart in a Child. (Asystolie à répétition consecutive à la dilatation aigue primitive du cœur chez l'enfant.) H. Méry, H. Salin and A. Wilborts.
25 Salt Fever and Sugar Fever in Infants Result of Contamination of the Water. (La fièvre de sel et la fièvre de sucre en pédiatrie.) F. Figueira.
26 Acute Appendicitic Abscess in Thirteen-Months' Babe. Phelip.

21. **Malignant Syndrome in Infectious Diseases.**—The first installment of Hutinel's article was reviewed in these columns April 17, p. 1364. He here compares the malignant type of measles, diphtheria, erysipelas, scarlet fever and others, pointing out that the malignant syndrome in each is practically identical, although prostration, disturbances in the circulation, pain in the epigastrium or repeated vomiting may in turn dominate the clinical picture. The malignant syndrome may prove speedily fatal or the child may recover. Sometimes the syndrome may be masked by other symptoms of other origin and significance. Nothing is found at necropsy that explains the peculiarly malignant course except changes in the suprarenals, and these seem to be constant. He gives illustrations of a number of the typical findings in the suprarenals in these malignant cases, and emphasizes that the asthenia, the hypotension, abdominal pain and the favorable action of epinephrin all point to the suprarenals as being responsible for the malignant syndrome with acute infectious diseases. Sometimes the pancreas is affected also, and the liver or other organs may be more or less pathologic, but the disturbance in the suprarenals is the main element in the malignant syndrome. Hutinel has noticed that it was most common in fat or obese children.

In treatment he had never obtained much benefit from local treatment of the throat and serotherapy until he used epinephrin in combination. Then all the local measures gave good results. He gives the epinephrin in daily doses of from 12 to 20 drops or more, according to the age of the child, and the effect is remarkable, he says, even in the gravest cases. The blood pressure rises, the child feels stronger and notices what is going on around him. The pulse grows stronger and slower, the heart action more like normal and the urine increases in amount. The throat clears up and the disease loses its menacing character. All the usual measures are applied in addition to the epinephrin. He warns that the latter is not the sole and the specific treatment for the malignant syndrome in the course of infectious diseases, but when the epinephrin is of good quality and well managed it produces remarkable effects. The child may die, notwithstanding, from some ordinary complication of the disease, pneumonia, meningitis, or pericarditis, but these complications have the least direct connection with the pyrexia.

23. **Congenital Tuberculosis.**—Péhu states that there are only fifty-one authentic cases of congenital tuberculosis on record, and that the conditions in these were all the same, namely, that tubercle bacilli were swarming in the mother's blood. This bacillemia was generally terminal. Such cases cannot be regarded as congenital tuberculosis, but rather of contagion through the placenta. His extensive study of the literature and clinical experience thus reaffirms anew that practically no one is born tuberculous.

Bulletin de l'Académie de Médecine, Paris

March 23, LXXIII, No. 12, pp. 353-383

27 *Experimental Research on Vaccination against Typhoid. F. Widal.
28 Intravenous Serum plus Chloral Treatment of Tetanus; Six Cases. H. Barnsby and R. Mercier.
29 Prophylaxis of Trench Foot. Orticoni.
30 Apparatus for Immobilization and Adjustable Extension. (Appareil d'immobilisation avec extension continue par traction permanente et réglable pour fractures compliquées du fémur.) Manson.
31 Early Treatment of Tetanus. Bacri.

27. **Vaccination Against Typhoid.**—Widal has been repeating his experiments of 1888 with vaccines consisting of cultures killed by high temperatures, and the results all confirm his previous announcements with regard to their vaccinating power in adequate dosage. The serum of the rabbits acquired an agglutinating power up to 1 to 5,000 in a few days after from two to four injections of cultures heated to 100 or 120 C. Deviation of complement and bactericidal properties were also acquired.

Presse Médicale, Paris

March 25, XXIII, No. 12, pp. 89-96

32 Simplified Technic for Cultivating Typhoid Bacilli from the Blood, Bile and Stools. (Notes pratiques sur la recherche du bacille typhique dans l'organisme.) P. Carnot and B. Weill-Halle.
33 *Wounds of the Nerves in War. A. Mouchet.
34 *Unusual Complications of Mumps. (Quelques complications peu connues des oreillons.) F. Ramond and G. Goubert.

March 27, No. 13, pp. 97-104

35 *Surgical Massage. (Le massage chirurgical: Méthode d'enseignement rapide à l'usage des infirmiers militaires.) Pariset.
36 Sterilization of Dressings. H. Godlewski.
37 Arthrotomy for Wounded Suppurating Joints. Chaput.
38 Pulverized Wood Charcoal in Prophylaxis and Treatment of Diarrhea in the Field. P. Ravaut.
39 Diagnosis of Paratyphoid Fever. L. Lagane.

April 1, No. 14, pp. 105-112

40 *Psychoneuroses among the Troops. Grasset.
41 Gasoline Followed by Iodin Sterilizes Wounds. (Moyen pratique pour éviter, dans la mesure du possible l'infection des plaies.) Eynard.

33. **Wounds of the Nerves.**—Mouchet says that he has operated in 100 cases of bullet or shell wounds of nerves in the limbs. The injury was almost invariably found more serious than had been anticipated. Cicatricial retraction and fibrous growth explain the progressive character of the paralysis and other disturbances, as he shows by a dozen illustrations. In some cases the radial nerve was nipped between the stumps of the fractured humerus. The response to electric tests is often misleading, but it is extremely instructive in eliminating false paralysis of psychic origin. Hysteric phenomena may be superposed on true paralysis. In any event, the patient has nothing to lose and may gain much from an operation on the wounded nerve. The great drawback is that war wounds do not heal as promptly as we are accustomed to under other conditions. For months after the acute inflammation has subsided there may be encysted foci, which warn of the necessity for caution. He always makes the incision to one side of the nerve when possible. The operation, he adds, is only the beginning of treatment; electrotherapy and mechanotherapy, with the collaboration of the patient, complete the cure.

34. **Complications of Epidemic Parotitis.**—Ramond found epididymitis in 20 of 115 cases of mumps in soldiers, associated with orchitis in 2 of them. It came on about the sixth and lasted to the fifteenth or twentieth day. The spermatic cord showed signs of inflammation in 40 cases; this funiculitis sometimes preceded the parotitis and seldom developed later than the second or third day. In 23 cases there were signs of inflammation of the prostate or seminal vesicles. The glands in the triangle of Scarpa were inflamed in 10 cases; in 6 the inguinal glands and in 3 several glands in the neck showed signs of inflammation. The tonsils were enlarged in 40 cases; one patient was unable to swallow for three days; otitis media developed in one case, resulting in deafness. In 60 cases severe diarrhea came on with the mumps, but it lasted only two or three days. Acute appendicitis developed in two cases, but subsided under medical measures in two weeks.

35. **Surgical Massage.**—Nine large illustrations are given to explain the directions for proper massage of the different groups of muscles. We should always bear in mind the functioning of the muscle involved and apply massage according to the direction of the fibers, as a rule.

40. **Psychoneuroses in War.**—Grasset prefers this term to the more current "hysterotraumatism," as he regards the emotional and mental factors as predominantly responsible for the condition. It soon subsides spontaneously in some and in others under appropriate treatment, but there is a third class who will probably recover, though not for a long time. They require special and prolonged treatment, reeducation of groups of muscles, tonics and psychotherapy. The well-to-do can be sent home on leave for two or three months after the family physician has been warned of the prognosis and of the necessity for guarding against suicide —Grasset knows of two recent suicides under these conditions. The poor, he continues, should be given during the war the same special care that, in time of peace, rich civilians get after a nervous breakdown. The soldiers whose nervous system has thus been crippled should be looked after as well as those crippled from loss of limbs.

Revue Médicale de la Suisse Romande, Geneva

March, XXXV, No. 3, pp. 117-184

42 *Purulent Pleurisy as Complication of Artificial Pneumothorax; Twenty-five Cases. M. Jacot. To be continued.
43 *Treatment of Goiter by Continuous Disinfection of the Intestines; Nine Cases. F. Messerli.
44 Complete Oculomotor Paralysis from Helminths; Two Cases. (Paralysie des muscles des yeux par trichocéphales et par oxyures.) A. Dufour.

42. **Pleurisy Complicating Artificial Pneumothorax.**—Jacot has been studying at Leysin the clinical forms of this affection, its pathogenesis and diagnosis as well as the influence of treatment. The details of 25 cases are tabulated, and he offers an explanation for Kienböck's phenomenon, that is, when the diaphragm on the diseased side falls with expiration, instead of rising, and rises during inspiration. Purulent pleurisy developed in 7 per cent. of the total cases of pneumothorax at Leysin, 1908-1913. Of the 25 cases, 36 per cent. were mild; 16 per cent. became grave secondarily, and 28 per cent. were grave from the first. In 20 per cent. the lesion was "open." In 9 cases the empyema developed very slowly, the general health was not impaired and, after the first sudden onset of the pleurisy, with dyspnea, pain and fever, temperature subsided to normal in from one to four months and thereafter there was no further fever, not even after puncturing. The empyema remained benign throughout. Possibly the pleura is thickened to such an extent that no absorption of toxins occurs. The lung had been completely compressed by the pneumothorax before the pleurisy developed, and these patients are all still in good clinical health. In 5 other cases the empyema perforated into the lung, but with a kind of valve action which closed the perforation during expiration. As it opened during inspiration, a little air got in each time and the pressure in the empyema thus increased regularly. All in this group succumbed to the empyema in from eight to twelve months.

43. **Systematic Use of Laxatives in Treatment of Endemic Goiter.**—Messerli gives an illustrated description of eleven cases of goiter in young men entering the military service in Switzerland. The father of one and the mother of two others had a goiter, and some of the sisters and one of the brothers had a goiter; only three of the young men had no family history of goiter. Messerli ordered laxatives for all. Small doses were given to maintain a continuous mild purging action to keep the bacterial flora down as much as possible. The results confirm those published by MacCar-

V. 191

rison in 1913 and later, and by Gaylord and Plehn, all apparently suggesting that the drinking water had some connection with goiter, and that by mechanically sweeping out the parasites in the drinking water we can reduce the tendency to goiter. The benzonaphthol, thymol, salol, aloes, jalap or rhubarb used may also have a destructive action on the parasites, or, by keeping the ordinary flora down, the already diseased thyroid is spared injury from their toxic products. In one case the neck measured 40 cm. before treatment and only 37.5 cm. after thirty-eight days of the laxatives. The difference in the size of the neck was 2 cm. in the others, except in one in which it was only 1 cm. and in another in which it was 4 cm. In two cases the improvement was obtained with a simple laxative without disinfecting properties, merely aloes, rhubarb and jalap.

Archiv für klinische Chirurgie, Berlin

CVI, No. 3, pp. 435-658. Last indexed March 13, p. 946

45 *Experimental Research on the Collateral Arterial Circulation of the Kidneys. E. Liek.
46 Tumors Originating in Sweat Glands. (Schweissdrüsenadenome.) G. Frattin.
47 *Resection of the Stomach. (Meine Erfahrungen mit 183 Magenresektionen.) H. v. Haberer.

45. **Collateral Arterial Circulation in the Kidneys.**—Liek reports experiments on twenty-seven dogs, two cats and four rabbits, and compares the results with similar work by others in this line. They confirm that the renal artery in dogs anastomoses with others, but Liek warns against applying to man the findings in animals. On the contrary, he affirms, we have to date no justification for treating chronic nephritis in man by Katzenstein's method of iodin treatment and suturing the kidney to the lumbar musculature, or for Isobe's method of nephrotomy and omentum grafting. This negative conclusion is the main outcome of Liek's research, he remarks.

47. **Resection of the Stomach.**—Haberer reviews his experiences with resection of the stomach in 183 cases since 1905. Only 60 were cancer cases; 11 of these patients did not survive the operation, but in 4 of these the fatality might have been avoided, as the suture failed to hold. One of the others had diabetes; another might have survived if the operation had been delayed for a few days to allow the heart and general health to be toned up a little. In the seventh case the malignant disease had already involved the pancreas and duodenum and the woman succumbed to the progressive cachexia. Another woman of 73 survived the operation and the wound healed, but the cachexia progressed, and this was also responsible for the death of the others, except one case of fatal pneumonia. The fatalities in nearly all the cancer cases thus show that the malignant disease was too far advanced for any chance of success when the operation was undertaken. The outcome in three cases is not known, but over 9 per cent. of the cancer patients are in good health to date, that is, 11 per cent. of those who survived the operation. Recurrence or metastasis after an interval of three or four years carried off the others.

These results encourage resection of the stomach in apparently the most desperate cases; survival for two or three years was the rule even in the far advanced cases in which otherwise the patients would have speedily succumbed. Survival for over two years was the rule in 25 per cent. of the 20 who died of recurrence later, and compares wonderfully with the survival for only four months, which is the average after a palliative gastro-enterostomy. He operated almost exclusively by the Billroth II method. He has been able to trace the history to date of 66 among the 123 ulcer cases; 77 per cent. are entirely cured and 12 per cent. essentially improved. In not less than 54 of his 123 cases the ulcer had already perforated into an adjoining organ.

The details of each case of resection are given separately, and the general conclusion is emphasized that resection of the stomach accomplishes far more than a gastro-enterostomy and with very little more danger. Last year he did resection in 56 cases and gastro-enterostomy in only 11, but the total experience on which the article is based includes 159 gastro-enterostomies, 6 partial resections, 37 cases of unilateral exclusion of the pylorus—a total of 385 operations. The size, adhesions, local metastasis and involvement of lymph-glands, even in the pancreas, so long as they can be removed, are not contraindications to resection of the cancerous stomach, and a permanent cure may be realized in apparently absolutely hopeless cases. Whatever the anatomic form of the ulcer, resection is far superior in its effects to gastro-enterostomy. The latter does not influence ulcers remote from the pylorus to any extent, and resection is the only means of getting rid of cancers masquerading as simple ulcers. He has never encountered a peptic duodenal ulcer after resection, while he has had six cases of it after gastro-enterostomy. In particular he emphasizes the necessity for seeking for multiple ulcers, systematically palpating the entire stomach and studying the behavior of the glands along both the greater and lesser curvature. Overlooked multiple ulcers he is certain are responsible for many instances of supposed recurrence.

Beiträge zur klinischen Chirurgie, Tübingen

XCV, No. 2, pp. 205-402. Last indexed April 17, p. 1364

48 *Benign Multiple Tumors of the Scalp. (Das Hidradenoma cylindromatosum der Kopfschwarte.) H. Coenen.
49 Blunders in Diagnosing Cancer of the Penis; Six in Sixty-Nine Cases. M. Baruch.
50 Injuries at Winter Sports. Staehelin.
51 Operative Treatment of Inflammatory Processes in Ovaries and Tubes and Their Relation to Peritonitis. (Entzündliche Adnexerkrankungen.) Amberger.
52 *Operative Treatment of Duodenal Ulcer. Wendt.
53 Operative Mobilization of Joints, and the Outcome. (Zur Frage der Dauerresultate nach operativer Gelenkmobilisation.) Hanck.
54 *Value and Dangers of Pyelography. L. Simon.
55 Growth of Thiersch Flaps into the Depths. (Ueber Tiefenwachstum des Epithels nach Thiersch verpflanzter Epidermislappchen.) G. Schoene.
56 Experiences with Extract of Blood Platelets. (Erfahrungen mit Coagulen—Kocher-Fonio.) J. Halpern.
57 Perinephritic Abscess. G. Doberauer.
58 *The Physiologic Importance of the Carotid Gland. Betke.
59 The Thymus and Spleen in Rats. (Experimentelle Thymusstudien. I.) M. Flesch.

48. **Benign Tumors of the Scalp.**—Coenen's patients in the three cases illustrated were women between 40 and 70. There were three or four mushroom-like tumors on the scalp, which had been years in developing. They finally required excision either on account of ulceration or the annoyance. The multiple occurrence, the slow growth and the heredity distinguish these tumors. They are perhaps best described as cylindromatous hidradenomas of the scalp.

52. **Duodenal Ulcer.**—The case reported had several unusual features, among them the fact that a hard ulcer developed in the stomach at the gastro-enterostomy opening. The patient was a man of 32, a great cigaret smoker and extremely nervous. The duodenal ulcer was found at necropsy completely healed, as also the gastric ulcer.

54. **Pyelography.**—Simon extols the great value of pyelography for differential diagnosis, emphasizing that it is free from danger when cautiously done under the proper indications. It should not be applied when the kidney pelvis is of normal size, or when there is a suspicion of a lesion in it or in the ureter from the ureter catheter. Another important precaution is to gage the capacity of the kidney pelvis beforehand, so that there need be no danger of overdistending it.

58. **The Carotid Gland.**—Removal of this gland in cats has apparently demonstrated that it has some share in the regulation of the blood pressure and in the growth of bones. The bones in the cats showed changes analogous to those of human rachitis. This is the more striking, Betke remarks, as cats never seem to develop rachitis spontaneously.

Correspondenz-Blatt für Schweizer Aerzte, Basel

March 20, XLV, No. 12, pp. 353-384

60 *Prophylaxis and Treatment of Venereal Disease in the Army. J. Jadassohn.
61 Influenza in a Battalion. W. Hoffmann.

March 27, No. 13, pp. 385-416

62 *Protection against Injury of the Hearing. (Akustisches Trauma und persönlicher Schutz gegen professionelle Schwerhörigkeit.) Siebenmann.
63 Experiences with Roentgen Work. (Bisherige Erfahrungen und Resultate aus Röntgeninsitut der Universitätsfrauenklinik Bern.) M. Steiger. Commenced in No. 10.

60. **Venereal Disease in the Army.**—In this address, read before the medical society of the canton of Bern, Jadassohn emphasizes the necessity for detecting venereal disease in its incipiency among the men. He pleads for systematic physical examination of the men at certain intervals. In order to take away the stigma of examining for venereal disease alone, he would have the men strip for a complete examination. The mouth should be examined for secondary syphilitic manifestations, the urine for gonorrhea. This examination should be imperative before a soldier is allowed to return home, to prevent his carrying unsuspected venereal disease home with him. It has been noticed, he adds, that active military service seems to afford a predisposition to tabes. Our recently acquired knowledge as to the early participation of the central nervous system in syphilis readily explains how the emotional and physical stress of a campaign is liable to affect the nervous system in a way to favor tabes and general paralysis later. In enlightening the soldiers as to the dangers of venereal diseases, a warning against fake remedies and fake doctors should always be included, and against liquor. He adds that as physicians we have the right to assert that injurious influences from abstention have not been demonstrated medically. In regard to personal prophylaxis, he remarks that chemical and mechanical protecting measures are already current knowledge in wide circles among the public, and that it is better for the layman to learn from his physician which are the best prophylactics, with the additional information that they all, without exception, offer merely a relative and none an absolute protection. By appealing to the man's consideration for his mates, to save them from danger, it is generally possible to trace a venereal infection to its source.

62. **Protection Against Injury of the Hearing.**—The results of the research here described were to have been presented at the international congress for occupational affections, which was blocked by the war. Siebenmann's pupils have demonstrated that it is possible to induce in animals the same pathologic anatomic changes in the internal ear which are the consequence of long exposure to loud noises, as in boiler making, etc. The lower part of Corti's organ seems to suffer first and most, but the nerve in time undergoes ascending degeneration over a certain stretch. The location of the lesions apparently varies to some extent with the pitch of the sound, as Siebenmann describes in detail from his experiments on guinea-pigs. The most serious destruction followed a single blank cartridge shot close to the ear; Corti's organ and the peripheral half of the connected first neuron of the auditory nerve were thus severely injured at one stroke. Conditions resembling those in boiler making were realized by automatic hammering on the outside of a big iron tube with the guinea-pig inside.

His experiments demonstrated further that the internal ear suffers only when the middle ear is sound and thus able to transmit impulses. Whenever the middle ear was functionally deficient from an inflammatory process or removal of one of the ossicles, the labyrinth showed no appreciable injury from the loud sound experiments. This was particularly instructive when transmission by the middle ear was blocked in this way on one side; the labyrinth was not damaged, while on the other, the normal side, the acoustic trauma had caused pronounced degeneration of the epithelium of the cochlea. These facts confirm the assumption that sound waves do no damage unless they enter through the oval foramen. Hence the practical conclusion that in order to ward off harm from long-continued loud noises, all that is necessary is to keep the air waves out of the entrance to the ear. The animals whose ears were plugged with oil-soaked cotton or other air-free mass, did not suffer injury of the internal ear from long-continued exposure to recurring loud noises. On the other hand, no preventive or attenuating influence was apparent from the use of thick felt, etc., under foot to deaden the sound. The transmission of sound by other routes than the middle-ear ossicles has slight if any injurious action on the organ of hearing, and all harm can be averted by thoroughly protecting the middle ear against sound waves, by an air-free, tight fitting, isolating plug in the ear passage.

Deutsche medizinische Wochenschrift, Berlin

March 25, XLI, No. 13, pp. 361-392

64 *Vaccine Therapy of Typhoid. (Spezifische Behandlung des Typhus abdominalis mit abgetöteten Kulturen von Typhusbazillen.) A. Goldscheider and Aust.
65 Changes in the Heart under the Stress of the Campaign. (Herzbefunde bei Kriegsteilnehmern.) C. Maase and H. Zondek.
66 The Explosive Action of Bullets. (Zur Explosivwirkung des Mantelgeschosses.) A. Fischer.
67 Deserted Brewery Utilized for Bath and Sterilization Purposes. (Bekämpfung der Kleiderläuse.) E. E. M. Hönck.
68 *Favorable Influence of Lumbar Puncture in Delirium Tremens. Ueber die Zerebrospinalflüssigkeit und über die Wirkung der Lumbalpunktion beim Delirium potatorum.) K. Steinebach.
69 *Serotherapy in Scarlet Fever. (Gibt es eine erfolgreiche Scharlachbehandlung?) R. Koch.
70 *Successful Removal of Gastric Cancer in Boy of 9. F. Karl.
71 *Traumatic Arthritis with Ankylosis. K. Hirsch. Commenced in No. 12.
72 Toilet of the Anus in Treatment of Hemorrhoids and Eczema of the Anus. F. Hammer.
73 *Pulverized Straw as Food and Forage. (Strohpulver als Nahrungsmittel und Futterstoff?) H. Boruttau.
74 The Hospital Train. Hackländer.

64. **Vaccine Treatment of Typhoid.**—Goldscheider and Aust treated fifty-seven typhoid patients with killed cultures of typhoid bacilli and were convinced of benefit from it. The vaccine sometimes causes an exacerbation of the fever which may keep up for several days, but is usually briefly transient. It is enough, however, to warn of the necessity for caution when the temperature is already quite high or there is complicating pneumonia, weak heart action or a tendency to intestinal hemorrhage.

68. **Lumbar Puncture in Delirium Tremens.**—Steinebach noticed that the pupils did not react to light in a case of delirium tremens, and he drew some cerebrospinal fluid to relieve the assumed pressure on the brain. The fluid was found under considerable pressure and the delirium subsided at once after the lumbar puncture. The man dropped to sleep without drugs and the delirium did not return. The fluid was apparently normal. This was in 1912. Then came Schottmüller's statement that in acute alcohol intoxication he had found alcohol in the cerebrospinal fluid and the fluid always under high pressure.

Steinebach has applied lumbar puncture in eighteen of fifty-two cases of delirium tremens since then, and the results have confirmed the assumption that the abnormally high pressure is responsible for a large share of the symptoms in delirium tremens. The alcohol does not seem to be directly responsible for the high pressure. It is more probable that the chronic alcohol poisoning generates some "between toxin," and that this secondary poison, acting on the meninges damaged by the alcohol, irritates them, and the cerebrospinal fluid is secreted more profusely or its absorption is interfered with or both may occur. This "between toxin" is probably nothing specific; normal meninges do not feel its effect. The lumbar puncture, by releasing some of the cerebrospinal fluid, not only regulates the pressure but gets rid thus of the amount of the "between toxin" that has found its way into the cerebrospinal fluid.

69. **Treatment of Scarlet Fever.**—Koch compares with Barasch's mortality of 15 per cent. in 1,438 cases of scarlet fever at Berlin his own mortality of 1.1 per cent. in 263 cases at Frankfurt. Koch ascribes the difference to his systematic application of serotherapy, which Barasch tried a little and discarded, but in which Koch has great confidence. Among 280 patients with extremely severe scarlet fever, treated by intravenous injection of 100 c.c. of serum taken from convalescents, that is, at about the third week of the disease, only one patient died. This was a child who was practically moribund when admitted, and died an hour later, before the serotherapy had had time to display its effect. In twelve milder cases normal serum was used and none died. The course of scarlet fever during the year in question was not milder than usual, rather the reverse; a larger proportion than common were of the severer type.

In Barasch's statistics, which embrace a ten-year period, it is remarkable how large a proportion of the fatalities occurred during the early stages of the disease. It is during the early stages in particular that serotherapy displays the greatest efficiency; Koch regards it as an almost absolutely certain weapon during this phase. It can be relied on more implicitly then, he says, than any other nonsurgical measure at our disposal, more even than antitoxin in diphtheria. Convalescent and normal serum act alike, but the former is more powerful. The subcutaneous route and inadequate dosage have brought serotherapy into discredit. It requires 50 c.c. for quite young children and 100 c.c. for older ones, and it is probably better to mix the serums of several convalescents. He tests the serum to be sure that it is sterile, then adds 0.5 per cent. of a 4 per cent. solution of phenol, distributes in ampules, which are then fused and inactivated by laying aside for several days. The infusion is made into a vein, passing the fluid through a paper filter in the funnel to ensure that no clots get into the vein. The effect is specific only during the first two or three days of a severely toxic scarlet fever free from complications.

70. **Gastric Cancer in Boy of 9.**—The child had never been strong and during the last three or four months had vomited often until he was too weak to stand. A knobby cancer, as large as a child's fist, was found at the pylorus and the region resected. The stump of the stomach was implanted in the jejunum. He bore the operation well and in three months was plump and ruddy, having more than doubled his weight, from 28 to 59 pounds, by March, 1915. The ultimate outcome of course is dubious, as cancer in the young is exceptionally malignant.

71. **Traumatic Ankylosing Arthritis.**—Hirsch points out the difference between the traumatic form, which is distinguished by hypertrophy of the bones forming the joint, and true deforming arthritis from chronic infectious processes, gout and senile changes, in which atrophy of bone is the special characteristic. The traumatic type differs further in that the arthritis is inclined to be stationary and does not display the progressive character of true deforming arthritis. The traumatic type affects but one joint, as a rule, and this is generally a large joint, and there are no trophic changes, no signs of atrophy in the roentgenogram, and usually no ankylosis. Differing from both of these types in several respects is a case he describes, in which soon after an accident to the fingers a process developed in the wrist leading speedily to bony ankylosis (mentioned in these columns May 1, p. 1535). In a second case acute reflex atrophy of the bones in the joint developed after a slight contusion of the third metacarpal bone of the middle finger. By the sixth week the joint of this finger had grown up completely and the atrophy of the bones of the finger and wrist has continued to progress. It now presents a typical example of Sudeck's atrophy. Reflex bony ankylosis is probably more common than hitherto supposed. It may develop with or without atrophy of the bones.

73. **Pulverized Straw as Forage.**—Boruttau remarks that Friedenthal's method of pulverizing vegetables has rendered it possible to utilize them more completely, as in this dust-fine powder the digestive juices can act on them better. In straw put through a similar process, the cells are broken up and whatever nutriment there is in the straw thus becomes available for fodder. Experiments with it for this purpose are now under way. Whether they prove successful or not, he adds, they will add an interesting chapter to this subject of the mechanical unlocking of the foodstuffs Nature gives us.

Medizinische Klinik, Berlin

March 28, XI, No. 13, pp. 351-380

75 *Typhus. (Ueber Fleckfieber.) E. Gotschlich and F. Neufeld.
76 *Changes in the Heart from Stress of War. (Kriegsärztliche Herzfragen.) G. Treupel.
77 *Means to Estimate Effect of Suturing a Nerve. (Methode, den Erfolg einer Nervennaht zu beurteilen.) P. Hoffmann.
78 *Sympathetic Ophthalmia from Wounds in War. (Umfrage über die sympathische Ophthalmie im Zusammenhange mit den Kriegsverletzungen des Auges.) Birch-Hirschfeld and Others.
79 Typhoid with Hemorrhagic Diathesis. K. Walko.

75. **Typhus.**—Gotschlich relates that during his eighteen years of service as chief of the municipal board of health, at Alexandria in Egypt, there were numerous epidemics of typhus, nearly all restricted to the prison. It was always milder in the natives; four of his medical aids contracted it and the two Europeans died. The incubation period ranged from ten to twenty days, and typhus often occurred in conjunction with relapsing fever, or one followed the other. He also witnessed numerous cases in adults in which the course throughout was so mild that it was mistaken for influenza; these mild cases are particularly dangerous on account of spreading the disease. Children usually have the disease so lightly that none are ever sent to the hospital for it. A febrile disease ran through an orphan asylum at one time, but it was so mild that it was impossible to be certain whether the suspicion of typhus was correct or not. The necropsy findings are not characteristic; at most, the spleen and respiratory organs are suggestive. He sometimes found the spleen very large and soft, almost a paste. The severer cases may suggest pneumonic plague; in fact, bacteriologic examination of the sputum is often the only means by which they can be differentiated, especially as a typhus parotitis may simulate a plague bubo.

His experience confirms further that the disease is not transmitted without vermin. No case developed from the four physicians in his service nor from any other case in a vermin-free environment. One of the epidemics at Alexandria developed in a colony of open tents, showing that ample ventilation does not ward off contagion. He found a distinct deviation of complement in typhus serum, but not until after defervescence or complete return to normal of the temperature, and only for a few weeks. Every one who has been exposed should have the temperature taken every day for two or three weeks, and the slightest rise should be regarded as suspicious. During the epidemic last spring, each typhus patient was sent to the hospital and a disinfecting squad with a portable bath tub and supply of garments was sent to the residence. All the inmates were undressed, washed and rubbed with soap and given clean garments to wear while their own clothing and the bedding, etc., was being disinfected at a central station. The disinfection of the house was accomplished by spraying a 5 per cent. aqueous solution of phenol into all crevices. These measures proved effectual even under the most primitive conditions. The Clayton apparatus rendered good service also.

Neufeld states that mercuric chlorid and formaldehyd fumes in the usual concentrations do not destroy lice. In personal prophylaxis he warns that lice move about more in dim light, so that it is well to take along an acetylene lamp when entering a dark or dimly lighted vermin-infested room. Lice getting on the clothing crawl very rapidly to some point where they can get inside, and single bites are not felt like the bites of other vermin. The lice do not seem able to crawl up on an overgarment with a smooth slippery surface, nor to cling to it. It is impossible to close any overgarment of ordinary goods at the wrist and ankle close enough to keep lice from working their way in.

76. **The Heart Under the Stress of the Campaign.**—Treupel comments on the remarkable way in which many persons with old, well-compensated valvular defects are bearing the strain of active military service without harm. They are men who before the war were accustomed to more or less physical exercise and who are eager to be in the fray; the *In-den-Kampf-ziehen-Wollen* is an important factor in maintaining the proper balance. If a man with a valvular defect is sent to the front against his will, or with only passive consent, the valvular defect is liable to be heard from soon. Changes at the mouth of the aorta and coronaries, evidently the result of various infectious diseases, were found in nine-twentieths of the soldier cadavers examined by Mönckeberg; all were men between 20 and 43, from the most diverse occupations. His report suggests that preceding infectious diseases are of great import in the development of atherosclerosis. The practical conclusion is that if, with the valvular defect, there is also a history of tuberculosis, syphilis

or any septic infection, the heart will not be able to stand the strain of a campaign. With a disproportionally small heart, or the untrained heart of the nonathletic young, there is liable to be a brief systolic murmur with the first sound. It should not be mistaken for a valvular defect; it is merely a relative or functional disturbance in the growing heart. Treupel found this brief systolic murmur in 76 per cent. of a hundred persons with otherwise normal heart; it is thrown off or outgrown sooner or later. Heart neuroses were common early in the war, with bradycardia, tachycardia or arrhythmia, often accompanied by signs of neuroses of the gastrointestinal tract. As the war progressed the neuroses were thrown off and the heart has borne the stress of the campaign surprisingly well as a rule. The attention being diverted from the subjective sensations, the men acquire a previously unknown confidence in their physical fitness.

77. **Suturing of Nerves.**—Hoffmann says that the ultimate outcome of a suturing operation on a nerve can be foreseen in many cases by applying irritation to the nerve below the suture in such a way that some sensation is felt in the paralyzed region if the conductibility in the nerve has been restored even in the slightest measure. It is thus possible to determine the outcome weeks before actual restitution occurs. He gives an illustrated description of two typical cases. In both the irritation was applied with the fingers pressing moderately on the forearm below the elbow. A spot was thus found, pressure on which caused a tingling in the hand at the base of the thumb and forefinger—showing some conduction in the sutured nerve—several weeks before it was plainly apparent otherwise.

78. **Sympathetic Ophthalmia.**—The replies are here given from four leading ophthalmologists to a question-blank sent out by our exchange enquiring as to the wounds of the eyes most liable to induce sympathetic ophthalmia, the indications for enucleation, the nature of the process, and treatment. Most agree that sympathetic ophthalmia usually gives no warning until it is well established, but one says that slight—often transient—signs of irritation and reduction of the play of accommodation warn of the impending sympathetic affection. The eye may tire readily, as discovered by enquiry, and there may be transient injection of the ciliary body. Those who discuss the nature of the process regard it as of infectious origin.

Mitteilungen a. d. Grenzgeb. der Med. und Chir., Jena

XXVIII, No. 3, pp. 415-618. Last indexed Jan. 16, p. 282

80 *Abdominal Disease and Eye Symptoms. (Vegetatives Nervensystem und abdominelle Erkrankungen.) A. Thies.

81 *The Residual Nitrogen in the Blood as an Index of Kidney Functioning. (Die Bestimmung des Reststickstoffes im Blut als Methode zur Prüfung der Nierenfunktion.) H. Hohlweg.

82 Lymphocytosis in the Blood as a sign of Constitutional Disturbance in Chronic Gastro-Intestinal Disease. J. Kaufmann (New York).

83 *The Pathologic Anatomy of Exophthalmic Goiter. (Pathologisch-anatomische Untersuchungen über die Basedowsche Krankheit.) H. Rautmann.

80. **Vegetative Nervous System and Abdominal Disease.**—Thies published in the last volume of the *Mitteilungen* a number of phenomena in the vegetative nervous system associated with various affections of the abdominal organs, the biliary passages in particular. He has continued his research in this line and here reports on a much larger material. Some of the phenomena are very distinct, others vague, but they all are useful for the differential diagnosis. They are particularly striking in the eye. Any increase in the tonus of the autonomous fibers of the oculomotor or sympathetic nerve is liable to cause the pupil or lids on that side to behave differently from those in the other eye. He summarizes the details separately in 147 cases, with twenty-nine illustrations of a number of striking cases. He explains the phenomena as the indirect result of mechanical irritation of nerve fibers of the vegetative nervous system, the effect of which is felt at a distance.

He does not think the internal secretions are involved, as the disturbances occur irrespective of these, while they all have in common a location liable to entail mechanical injury of some part of the vegetative nervous system. The farther away from the mouth, the greater the percentage of positive findings. They are most frequent with disease of organs near the sacral autonomous nerves, that is, the large intestine, genitals and bladder. There may be a tendency for one eyeball to protrude, but the most frequent finding is that the lids do not cover the eyeball symmetrically; it is exposed more in one eye than the other, and the pupil is wider. With disease of the esophagus one eyeball was never exposed more than the other, but in 60 per cent. of the cases the pupils showed a difference. Asymmetry in the pupils was the more frequent phenomenon, but both were rare with disease of the kidneys and biliary apparatus. They both disappeared as a rule after the cure of the abdominal affection responsible for them. With affections of the large intestine there was a difference in the pupils in 76.9 per cent. and in the exposure of the eyeball in 15.3 per cent. With disease of the rectum and sigmoid the figures were 63.1 and 57.8 per cent., and, with disease of the genital organs or bladder, 85 or 60 per cent. Every case in this last group had one or the other of the eye phenomena.

81. **The Residual Nitrogen in the Blood as a Sign of Kidney Functioning.**—Hohlweg's assertions with regard to the importance of the residual nitrogen in the blood serum as a test of the functional capacity of the kidneys were summarized in these columns (May 1, abstract 66, p. 1536) from his previous communication on the subject. He gives further details and tabulations here of the findings at the time and months later.

83. **Pathologic Anatomy of Exophthalmic Goiter.**—Rautmann devotes 130 pages to the pathologic anatomy of Basedow's disease, which, he affirms, is by no means restricted to the thyroid alone. The pathologists have too long contented themselves with the thyroid, when they should have extended their research to all the glands with an internal secretion. He reviews the literature on the necropsy findings in various organs in exophthalmic goiter, and then describes his own findings in three typical cases in which all the glands with an internal secretion were examined with minute care. In his own cases, and in all the descriptions he has found, the thyroid seemed to have reverted to an infantile type, the histologic findings resembling those of a child's thyroid. The same applies also to the thymus, and the severity of the Basedow syndrome seemed to be proportional to the earlier infantile character of the histologic findings in the organs with an internal secretion. No pathologic anatomic findings were encountered in any other organs in the uncomplicated cases of exophthalmic goiter, but the pathologic findings in the glands with an internal secretion varied widely in intensity. The thyroid was always, and the thymus usually, involved, but only occasionally the parathyroids and the hypophysis. The suprarenals and also the ovaries were frequently found abnormal and, in some cases, possibly also the islands of Langerhans.

Throughout an infantile type of structure is noticeable as the anatomic basis of Basedow's disease. The changes in the thyroid, thymus, parathyroids and hypophysis are predominantly of a hypertrophic hyperplastic nature, while in the suprarenals, ovaries and islands of Langerhans atrophic hypoplastic processes predominate. The result is excessive functioning in the first group and deficient functioning in the others. There are no signs of inflammation in the organs, while many signs point to toxic action, and to the system of glands with an internal secretion as the source of the toxin. Rautmann takes up each of these glands in turn, showing which are responsible for the various symptoms observed. Treatment based on the above should aim to reduce the size of the thyroid and thymus and supply the deficient ovarian secretion. In conclusion he suggests that in Addison's disease the suprarenals may play the leading part, like the thyroid in exophthalmic goiter, and the thymus in the thymicolymphatic status. He also comments on the close connection between severe exophthalmic goiter and certain forms of mental disease, to which Sattler has called attention. This suggests that the internal secretions may play a part in the development of certain psychoses.

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Münchener medizinische Wochenschrift, Munich

March 23, LXII, No. 12, pp. 393-424

84 Improved Technic for Serodiagnosis of Syphilis. (Die gleichzeitige Verwendung des Hämolysins und Hämagglutinins als Indikatoren bei der Komplementablenkungsreaktion zur Feststellung der Syphilis.) W. Pfeiler and G. Scheyer.
85 *Distribution of Diphtheria Bacilli in the Body. W. Plange, H. Schnitz and Rall.
86 *Diphtheria Bacilli Carriers. V. Engelmann.
87 Circumscribed Ossifying Myositis. G. B. Gruber.
88 How the Traumatic Neurosis is Generated by the Physician's Examination. L. W. Weber.
89 Bacteriology in Typhoid. (Typhus im Kriege.) H. A. Gins and E. Seligmann.
90 *Fracture of the Femur in the Field. (Oberschenkelfrakturen.) O. Jüngling, A. Angerer, W. Danielsen, M. Kahleyss and Lenz.
91 *Treatment of Frozen Fingers and Toes. (Zur Behandlung der Erfrierungen.) A. Wittek and E. Bundschuh.
92 Efficacy of Hexamethylenamin in Typhus. B. Coglievina.
93 Methyl Violet in Local Treatment of Wounds. (Pyoktanin in der Kriegschirurgie.) P. Schrumpf and W. F. v. Oettingen.

85. **Diphtheria Bacilli in the Body.**—Plange examined the organs of twenty diphtheria cadavers for the bacilli and found them only in comparatively few cases in which tracheotomy had not been done. This operation evidently aids in spreading the bacilli so that they were found in the suprarenals in 100 per cent. of all the tracheotomy cases, but only in 14.3 per cent. of the others. In the other organs the discrepancy was not quite so great; in the lungs, for instance, the figures were 60 and 37.5 per cent.

86. **Diphtheria Bacilli Carriers.**—Engelmann relates experiences which show that the nose may harbor bacilli long after they have disappeared from all other accessible points.

90. **Fracture of the Femur.**—This group of articles tell of the best way of treating and immobilizing a broken thigh in the field, in the base hospital and at home.

91. **Treatment of Frozen Fingers and Toes.**—Wittek and Bundschuh write from widely separate hospitals each to extol the advantages of Noesske's incision down to the bone at the tip of a finger or toe threatened with gangrene. This starts the capillary circulation anew, especially when supplemented by a suction bell. Many badly frozen fingers and toes were saved from amputation by this means.

Wiener klinische Wochenschrift, Vienna

March 25, XXVIII, No. 12, pp. 313-336

94 *Extermination of Body Lice with Methylphenylether. (Neues, sehr wirksames Mittel gegen die Kleiderlaus.) S. Fränkel.
95 Personal Prophylaxis against Typhus. R. Kraus.
96 *Epidemiology, Clinic and History of Typhus. (Flecktyphus.) E. Lindner and I. Fischer.
97 Muscular Rheumatism among the Troops. (Die rheumatischen Erkrankungen im Kriege.) E. Freund.
98 The First Artificial Limbs. (Uebergangsprothesen.) G. Engelmann.

94. **Extermination of Lice.**—Fränkel has been systematically studying various drugs seeking for one that destroys vermin without discomfort or danger to the bearer. He is director of the chemical laboratory of the Austrian cancer research society, and here announces that in methylphenylether the aim has been attained. This kills lice within ten minutes, even without direct contact, while it does not irritate the skin. The chemical name for it is methylphenylether, and it is easily made by methylating phenol. The only drug of which he knows that has an analogous action is dimethylresorcin, one drop of which will kill five frogs under a bell in less than five minutes. The methylphenylether used to be called anisol, as it was first made from anisic acid, a product of the oxidation of anethol.

96. **Typhus.**—Lindner comments on the mildness of typhus among the Russian captives at Linz, while it is extremely severe in the Austrian physicians and attendants. In 54 cases in this latter group the mortality has been 24 per cent.; 33 per cent. among the 12 physicians, while none of the 300 Russian typhus patients have died. Fürth reported from Tsingtau not long ago that of the Europeans contracting typhus there 33 per cent. died, but only 11 per cent. of the native Chinese. Lindner cites a number of data which indicate the possibility that the infecting virus in typhus is thrown off in a certain form, which is not infectious for man until it has been activated by a sojourn in the body of a louse. This would explain the transmission of the disease by fomites. The louse activating the virus may not have been in contact with the typhus patient, but have acquired the virus from bed or body linen, or in dust. To protect yourself against vermin in the presence of the typhus patient is not enough; lice acquired elsewhere may activate the virus you have carried off in an otherwise harmless form.

Zentralblatt für Chirurgie, Leipzig

March 27, XLII, No. 13, pp. 201-216

99 Inadvisability of Wrapping a Nerve in a Fascia Flap. (Verhalten der auf operiete schussverletzte Nerven überpflanzten Fascienlappen.) L. Kredel.
100 Adjustable Apparatus for Mobilizing Stiff Joints. (Gelenkmobilisationsschienen nach Dr. Schede.) Neumeister.

Zentralblatt für Gynäkologie, Leipzig

March 27, XXXIX, No. 13, pp. 201-216

101 Retrodisplacement of Uterus with Simultaneous Tubal and Normal Pregnancy and Myomas in Uterus. (Isochronisch heterotope Eiimplantation bei Myoma uteri.) J. Lange.

Policlinico, Rome

March 28, XXII, No. 13, pp. 417-448

102 *Glycosuria in Various Pathologic Conditions. (Sul reperto del sintoma "glicosuria" in certe condizioni morbose.) A. Pozzo.
103 *Immunity of Young Infants to Measles. (Immunita dei piccoli lattanti verso il morbillo.) M. Andreotti.

102. **Transient Glycosuria in Surgical Affections, Etc.**—Pozzo refers in particular to the transient glycosuria liable to accompany infectious processes. Becker found it present in 2 or 3 per cent. of several thousand cases of phlegmons, erysipelas, etc., and others have noted it in various acute infectious diseases as well as with surgical affections and under the influence of certain poisons, etc. Vassale noted glycosuria in cats after removal of the carotid gland, and Pozzo has been repeating his experiments in this line. He found that sugar appeared regularly in the urine, up to 8.5 per thousand, after one or both carotid bodies had been cauterized or otherwise maltreated or displaced, and operations were performed elsewhere in the body. Under other conditions these same operations induced no glycosuria or merely traces. In two cases he found that the high percentage of sugar in the urine dropped to zero after the operation on a surgical process in neck or knee. The temperature had been normal throughout in both cases. In several other surgical cases there was pronounced glycosuria, but there was also a high fever. The urine of patients after major operations frequently showed more or less sugar for a day or so.

103. **Immunity of Young Infants to Measles.**—Andreotti says that in a recent epidemic of 150 cases of measles, 14 were in infants, but none in babes under 5 months old. In several families all the children had measles except the youngest baby, although the children all slept and played together. In two families the children and the mothers had measles, but the nursling of 2 months escaped. Andreotti assured the mothers that they could keep the baby with them and continue to nurse it, and this confidence in the natural immunity of infants under 6 months old was sustained by the course of events.

Riforma Medica, Naples

March 27, XXX, No. 13, pp. 337-364

104 *General Anesthesia from Intramuscular Injection of Ether. B. Formiggini. Commenced in No. 11.

104. **Intramuscular Injections of Ether.**—Formiggini's research on rabbits given intramuscular injections of ether gave disappointing results. The anesthesia induced was not complete nor reliable, while the by-efforts and mishaps were numerous.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

April 3, I, No. 14, pp. 1077-1164

105 *Factors in the Complement-Deviation Test. (Een nieuwe verklaring van Neisser en Wechsberg's verschijnsel met behulp van het onbekende verschijnsel der specificke broosheid.) B. P. Sormani.

106 Experimental Research with Veratrin on Frogs. (De oorsprong van de veratriekromme.) H. T. Deelman.
107 *Production of Bile-Pigment in the Spleen. (Studien over anhepatische galkleurstofvorming. III.) A. A. H. van den Bergh and I. Snapper.

105. **The Specific Limit of Resistance of Red Blood Corpuscles as a Factor in the Deviation of Complement.**—Sormani is privat-docent of serology at the University of Amsterdam, and his studies have demonstrated, he says, that none of the explanations for the complement-deviation reaction that have been advanced to date are tenable. He shows the fallacies in turn of the explanations offered by Gruber, Metchnikoff, Levaditi, Gay, Buxton and Müller, as well as those of Neisser and Wechsberg, to whom, he adds, we owe the diagnostic method. In exchange he presents evidence to prove that the deviation of complement is a phenomenon that results from the precipitating action of the immune serum on the surface of the antigen. This precipitating action reduces the solubility of the antigen. It also is responsible for a specific limit to the resistance of the red blood corpuscles, or specific fragility, as he calls it. His experience indicates that the complement reaction should be tested with a powerfully hemolytic serum which, at the same time, has but a weak precipitating action. The immobilization of motile bacteria by an immune serum is readily explained by the precipitating action of the serum, which renders a little stiffer the surface of the flagella.

107. **Production of Bile-Pigment Outside of the Liver.**—This third installment of the report of research on this subject is devoted to the production of bile-pigment in the spleen in cases of pernicious anemia, Banti's disease, hemolytic icterus and other affections accompanied by excessive hemolysis. The blood from the splenic vein was compared with blood taken from a peripheral vein immediately after death or at operations permitting this. It was found constantly in four operative cases and in two cases that terminated fatally that the blood serum from the splenic vein contained much more bilirubin than the peripheral blood; in some cases there was a threefold difference. The spleen serum was much darker colored. Everything indicated that the bilirubin in question had been formed in the spleen. (See also abstract 107, p. 1538.)

Hospitalstidende, Copenhagen

March 31, LVIII, No. 13, pp. 365-328

108 *Ovarian Prègnancy. (Graviditas ovarica.) I. Collin. Commenced in No. 12.

108. **Ovarian Pregnancy.**—Collin's patient was a young woman who had had an abortion at seven months and a year later presented symptoms suggesting a ruptured tubal pregnancy six weeks after menstruation. The operation revealed that the trouble was a ruptured ovarian pregnancy. Collin gives an illustration of the specimen and compares with it the similar cases on record, of which he has found 50. More than 50 per cent. had not reached the end of the second month and the operation forestalled rupture in a third of these. Only 6 or 7 cases are known in which the pregnancy had progressed beyond the third month up to the eighth, and 3 in this group died after the rupture. In 12 cases the pregnancy had progressed to term, and in 4 of these both mother and child were saved, and in 3 both succumbed; in 4 the child was dead, but the mother survived, and in one the child survived, while the mother died. In 10 cases the fetus had become a lithopedion and in 3 other cases the presence of the pregnancy in the ovary was a necropsy surprise. Statistics are given as to the comparative frequency of this form of extra-uterine pregnancy, and a bibliography is appended.

Norsk Magazin for Lægevidenskaben, Christiana

April, LXXVI, No. 4, pp. 417-536

109 *Case of Osteomalacia with Tumor in Parathyroid Gland. P. Bull and F. Harbitz.
110 Results of Fifteen Years of Sanatorium Work. (Kurresultaternes varighet ved Reknes sanatorium i tidsrammet 1898-1912.) E. Kaurin and N. Lunde.
111 *Operative Treatment of Detachment of the Retina. (Sclerectomia prae-aequatorialis ved nethindeavløsning.) I. Schiøtz.
112 *Juvenile Deforming Osteochondritis. (Malum deformans coxae infantile: Calvé-Perthes' sygdom.) Sinding-Larsen.

109. **Osteomalacia with Parathyroid Tumor.**—The patient was a woman of 26. After the birth of her fourth child, chronic nephritis developed; six months later, typical osteomalacia, and finally a cheesy tuberculous pneumonia, from which the woman died about a year and a half after the first symptoms of osteomalacia. Ovariectomy during the last stages gave no relief. A colored plate shows the typical findings in the long bones. A tumor was found also in the left lower parathyroid gland. There seems to be some connection between the parathyroid glands and calcium metabolism, as several reports have been published of a tumor in one parathyroid gland as an accompaniment of osteomalacia. But that this is not inevitable is shown by Harbitz' case, in which there was a tumor in all four parathyroids in a man of 75 with shaking palsy, but there was nothing to suggest osteomalacia.

111. **Operative Treatment of Detachment of the Retina.**—Schiøtz gives the details of twenty-one cases in which what he calls pre-equatorial sclerectomy was done for detachment of the retina. The results were not very encouraging, and in the few cases in which benefit was derived it must be ascribed in part to the patients' long stay in bed.

112. **Deforming Juvenile Osteochondritis.**—Sinding-Larson has encountered nine cases of the typical hip affection described by Calvé and Perthes—a nontuberculous affection in children midway between deforming arthritis and coxa vara. Three of the nine typical cases gave a positive response to tuberculin so that tuberculosis cannot be positively excluded in these and also in three others in which the test was not applied. But there are three other cases in which the negative reaction certainly excludes tuberculosis. The affection seems to develop in a previously healthy joint; there were no signs of rachitis in any of his cases. Clinically, it is impossible to distinguish between incipient tuberculous hip-joint disease and incipient Calvé-Perthes. The prognosis of the latter is good. Some of his patients have been under observation up to eleven years. Immobilization is not needed, but merely rest and, possibly, massage of the abductors. Negative skin or subcutaneous tuberculin reactions exclude tuberculosis, but it is better to avoid a general and focal reaction unless absolutely necessary. In the course of systematic tuberculin testing of all the children sent to the sanatorium in his charge with a diagnosis of tuberculosis, a number failed to give a positive response and yet the Roentgen findings in the hip were not all of the pronounced Calvé-Perthes type. It is safer to treat for a tuberculous lesion once too often than once too few times. If it is merely the Calvé affection, the Roentgen control will soon establish this, and the immobilization will have done no harm. The Roentgen findings at the time and after several years are shown for the various cases.

Correction.—Title No. 53, in the Foreign Current Literature Department, April 17, p. 1365, was incorrectly translated. It should read:

53 Localization of Tactile Impressions. (Zur Lokalisation des Tastsinns.) F. Boenheim.

In the case described in the article to which the title belongs a bullet had grazed the left parietal bone and gouged off a small splinter at a point which Krönlein's method showed to be over the central fissure. The nervous system seemed to be intact except that the right arm was extremely weak and the faculty of recognizing the nature of objects by handling them was lost, as also the sensation from simple contact. No discrimination was made between sharp and dull contacts, and the impression was long retarded. Deep needle pricks caused but slight pain. The shock from the bullet had probably induced some hemorrhage in or close to the central fissure, but it was not enough to induce any motor symptoms, and clinical recovery was soon complete.